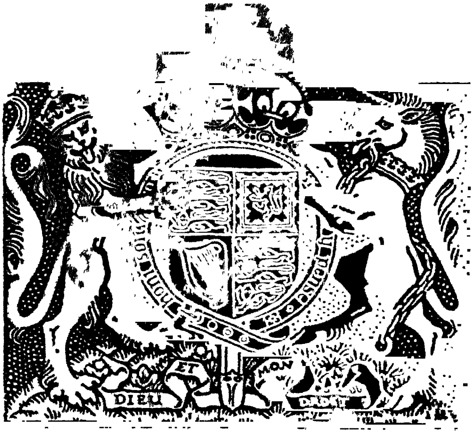
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RESEARCH INSTITUTE, NEW DELHI.

THE

PROCEEDINGS

OF THE

LINNEAN SOCIETY

OF

NEW SOUTH WALES.

(SECOND SERIES.)

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Title-page, Contents, Index to Vol. I. (2nd. Ser.), and Errata.

ERRATA.—VOL. I.

(SECOND SERIES).

Page 156, line 15 from bottom—*for* convexeusculus *read* convexiusculus.

Page 156, line 13 from bottom—*for* clypens *read* clypeus.

Page 158, line 7 from bottom—*for* Carettocchelys *read* Carettochelys.

Page 161, line 10 from bottom—*for* Carretochelys *read* Carettochelys.

Page 189, line 7 from bottom—*for* Euthyhinus *read* Euthyrhinus.

Page 202, line 3 from top—*for* P. pleuristictus *read* T. pleuristictus.

Page 202, lines 4 and 6 from top—*for* P. lineatus *read* T. lineatus.

Page 226, line 15 from top—*for* C. accuminata *read* C. acuminata.

Page 464, line 9 from bottom—*for* p. 51 *read* p. 139

Page 465, last line—*for* orginal *read* original.

Page 554, line 6 from bottom—*for* Didymogaster silvaticus *read* Didymogaster silvatica.

Page 557, line 15 from top—*for* Sphæxochus *read* Sphærexochus.

Page 558, line 8 from top—*for* Tragoceras *read* Tragocerus.

Page 805, line 16 from top—*for* ptterocosmana *read* pterocosmana.

Page 881, line 10 from top—*for* rubritorquatus *read* rubritorquis.

Page 938, last line—*omit the full stop after* apparently.

Page 946, line 2 from top—*for* Intraclitellian *read* Anteclitellian.

Page 956, line 7 from top—*for* p. 361 *read* p. 561.

Page 973, line 5 from bottom—*for* P. austrinia *read* P. austrina.

Page 1085, line 2 from top } *for* W. H. Boyer-Bower *read* T. H. Boyer-Bower.
Page 1096, line 7 from top }

PROCEEDINGS

OF THE

LINNEAN SOCIETY

OF NEW SOUTH WALES.

WEDNESDAY, 27TH JANUARY, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the chair.

Mr. W. H. Smithers and Mr. S. MacDonnell were introduced as visitors.

MEMBER ELECTED.

J. Bracebridge Wilson, Esq., M.A., F.L.S., Geelong.

DONATIONS.

"Comptes Rendus des Séances de l'Académie des Sciences." Paris. Tome CI., Nos. 16 to 19. October and November, 1885. From the Academy.

"Conférence faite au Muséum National en presence de L.L., M.M. Impériales par le Dr. Ladislau Netto, Directeur Général du Muséum National de Rio de Janeiro." From the Director.

"Zoologischer Anzeiger." VIII Jahrg. Nos. 209, 210, 1885. From the Editor.

"Proceedings of the Cambridge Philosophical Society," (England.) Vol. V., Part IV., 1885. From the Society.

"Proceedings of the Zoological Society of London." Part III., 1885. From the Society.

"Mémoires et Publications de la Société des Sciences des Arts et des lettres du Hainault," 1885. From the Society.

"Feuille des Jeunes Naturalistes." No. 182. 1st December 1885. From the Editor.

"Mémoires de la Comité Géologique à St. Pétersbourg." Vol. III. Nos, 1 & 2, 1885. From la Comité Géologique à l'Institut des Mines, St. Pétersbourg.

"Bulletin of the Museum of Comparative Zoology, Cambridge, Mass., U. S. A." Vol. XII., No. 2, 1885. Annual Report of the Curator, 1885. From the Museum.

"Zygænidæ and Bombycidæ of N. America." By R. H. Stretch. Vol. I., 1871-1873. "On the Jeannette Arctic Expedition and the Missing Whalers." By C. W. Brooks. "The Jeannette Search Expedition." By C. W. Brooks. "Origin of the Chinese Race." By C. W. Brooks. "Arctic Drift and Ocean Currents." By C. W. Brooks. "Japanese Wrecks Stranded and Picked up in the North Pacific Ocean." By C. W. Brooks. "Early Discoveries of the Hawaiian Islands." By H. A. Pierce. "Footprints found at Carson States Prison." By H. W. Harkness, M.D. "On certain Remarkable Tracks found in the Rocks of Carson Quarry." By Joseph Le Conte. "Pre-Historic Footprints in the Sandstone Quarry of the Nevada State Prison." By C. D. Gibbes. "Fossil Jaw of a Mammoth." By C. D. Gibbes. "The History and Distribution of the Fresh Water Mussels" By R. E. C. Stearns. From the California Academy of Sciences.

"Science." Vol. VI., Nos. 146-149, November 20th to December 11th, 1885. From the Editor.

"Victorian Naturalist." Vol. II., No. 9, January 1886. From the Field Naturalists' Club of Victoria.

"Supplementary Catalogue of the Library of the Australian Museum to 31st December, 1884." From the Australian Museum.

"Zapiski de la Société des Naturalistes de la nouvelle Russie," Odessa. Tome IX, Fasc. I. and II., with Plates. "Flóra Chersonensis." By E. A. Lindemann. Vol. I. From the Society.

"Revue Coloniale Internationale." Tome I., Nos. 1-6, July-December, 1885. From l'Association Coloniale Néerlandaise à Amsterdam.

"Archives Néerlandaises des Sciences exactes et naturelles." Tome XX., 3me Livraison, 1885. From the Society.

"Report of the Trustees of the Free Public Library, Sydney, 1884-5." From the Trustees.

"Journal of Conchology." Vol. IV., No. 12, October 1885. From the Conchological Society of Great Britain and Ireland.

PAPERS READ.

NOTES FROM THE AUSTRALIAN MUSEUM.

DESCRIPTIONS OF SOME NEW AUSTRALIAN FISHES.

By E. P. Ramsay, F.R.S.E., and J. Douglas-Ogilby.

In the following paper will be found descriptions of four new fishes from Australian waters, the two first having been obtained in Port Jackson, namely, *Gobius depressus*, and *Monacanthus mosaicus*; the remaining two, *Solea textilis* and *Galaxais kayi* were sent for identification to us from the Adelaide Museum.

Gobius depressus. *sp. nov.*

D. 6 : 1/10 : A. 1/9 : V. 1/5 : P. 17 : C. 15 : L. lat. ca. 42. L. trans. ca. 12.

Length of head $5\frac{1}{3}$, of caudal fin $3\frac{2}{3}$, height of body 11 in the total length. Eyes close together on the upper surface of the head, the diameter is $4\frac{1}{2}$ in the length of the head and equal to that of the snout, which is obtuse. Head very much depressed, its breadth equal to the distance between the anterior margin of the eye and the gill-opening; its height $2\frac{2}{5}$ in its length. Cleft of mouth oblique; lower jaw much the longer. Maxilla does not reach to the front margin of the orbit. Several rows of pointed teeth in both jaws, the outer row in each being much enlarged especially in front, and moderately curved. Fourth dorsal spine the longest, much more than the height of the body; the last spine is so far removed from the penultimate as to be almost midway between it and the origin of the soft dorsal: pectorals long, reaching to the vent and equal in length to the head: anal commences beneath the first dorsal ray, and terminates beneath the eighth: caudal elongate, pointed. Anal papilla small. The colors appear to have been yellowish-brown, the head and fins being darkest.

The specimen measures three and a half inches, and was obtained by Mr. Brazier beneath a stone between tide marks on the Bottle and Glass Reef, Port Jackson, during last November. When it came into our hands it was unfortunately almost denuded of scales, whence the difficulty of determining with certainty the numbers on the lateral and transverse lines. Its registered number is B. 9,758.

MONACANTHUS MOSAICUS. *sp. nov.*

D. 35-36: A. 32-34: P. 13: C. 12.

Length of head $3\frac{1}{4}$, of caudal fin $4\frac{1}{5}$, height of body $1\frac{3}{4}$ in the total length. Eyes situated far back on the head, three diameters from the end of the snout, and one apart. Gill-opening oblique, reaching but little below the upper angle of the base of the pectoral, and equal to a diameter of the orbit, beneath the middle of which it is placed. Teeth with strong sharp angular points at intervals. Upper profile of snout rather concave; back between the dorsals straight, and with a gradual rise to the origin of the second dorsal. The dorsal spine commences above the anterior third of the eye; it is moderately strong, curved backwards, and bears four series of small barbs, the anterior pair being close together: soft dorsal and anal low, the longest rays being in the first quarter. Ventral spine very short, fixed; pectorals situated directly beneath the eyes; caudal rounded. Skin velvety. *Colors*, red with anastomosing blue lines on the head and body; some of the upper spaces so formed have a large central spot of umber brown; caudal brownish.

The description has been taken from two specimens measuring respectively $4\frac{2}{3}$ and 4 inches, which were trawled off Shark Reef, Port Jackson, on the 9th instant. Registered numbers B. 9754-5.

SOLEA TEXTILIS. *sp. nov.*

D. 60 : A. 43 : V. 5 : C. 18 : L. lat. 68.

Length of head $\frac{1}{5}$, height of body $\frac{1}{3}$ of the total length. The lower eye commences slightly in advance of the upper; its diameter is $\frac{1}{6}$ of the length of head, and equal to that of the snout; interorbital space deeply concave, $\frac{1}{2}$ of a diameter of eye. Height of head equal to its length. Upper jaw a *little* the longer. Lower profile of head fringed with numerous small hair-like tentacles; a few coarser ones on the lower jaw. The angle of the mouth reaches to below the anterior margin of the lower eye. Anterior nostril tubular; a short fringed tentacle in front of the upper eye. Teeth minute. Dorsal and anal rays branched at the tips: ventrals separate from the anal: pectorals absent: caudal rounded. Scales strongly ctenoid; none on the dorsal and anal rays. *Colors,* sandy, each scale with a narrow semi-circular black margin.

This species belongs to that division of the genus *Solea* separated by Hr. Kaup as *Aserragodes.* Our example measures $4\frac{4}{5}$ inches in length, and was obtained by the trawl in the Gulf of St. Vincent, some ten miles due west from Glenelg Jetty, in water about twelve fathoms in depth: it has been received in exchange from the Adelaide Museum. Registered number in the Australian Museum I.1.

GALAXIAS KAYI. *sp. nov.*

D. 10 : A. 11 : V. 8 : P. 14 : C. 16 : Vert 33/20.

Length of head $5\frac{3}{4}$, of caudal fin $7\frac{2}{5}$, height of body 6 in the total length. Diameter of eyes $\frac{2}{9}$ of the length of the head, $\frac{5}{7}$ of that of the snout, and $\frac{2}{3}$ of the interorbital space, which is flat. The breadth of the head is equal to its height, and to the length behind the middle of the eye. Jaws equal; maxilla reaches to beneath the middle of the eye. Each jaw with a single row of small subulate teeth; edge of the tongue with several larger recurved teeth; palatine teeth shorter and blunter in a narrow row on the inner margin of the bones. The length of the interspace between the dorsal and anal fins is equal to the distance between the front margin of the eye and the base of the pectoral fin; that between the anal and caudal equal to the head in front of the hind margin of the eye; anal commences beneath the seventh dorsal ray: the length of the pectoral is $\frac{2}{5}$ of the distance of its root from the ventral, which latter terminates more than its own length from the vent. *Colors*, olive green above the lateral line, yellow below; generally some short fasciæ depending from the former color.

Several specimens of this handsome *Galaxias* have been forwarded to us for identification by our esteemed correspondent, Mr. Robert Kay, General Director and Secretary of the Adelaide Museum, after whom we have named it; they were taken in Fifth Creek, S. Australia; the largest measures $3\frac{3}{4}$ inches, and is registered, I. 3.

NOTES FROM THE AUSTRALIAN MUSEUM.

A CONTRIBUTION TO THE KNOWLEDGE OF THE FISH-FAUNA OF NEW GUINEA.

By E. P. Ramsay, F.R.S.E., and J. Douglas-Ogilby.

The fishes described in the following paper form part of the collections obtained (1) by Mr. Froggatt during the recent expedition sent out by the Geographical Society of Australasia to New Guinea, and (2) by Mr. H. Smithurst, chief engineer of the Governor Blackall, during the official visit of the late Sir Peter Scratchley to the coast of that island. In both cases these gentlemen were fortunate in securing new and distinct species, though, as may be supposed, Mr. Froggatt, having the advantage of investigating a new and till then unexplored region, obtained the greater number of novelties. Of the twenty-five species brought home by the two expeditions no less than twelve are here described as new, namely,—*Ambassis gigas*, *Scolopsis macrophthalmus*, *Equula smithursti*, *Gobius concavifrons*, *Nematocentris novæ-guineæ*, *N. rubrostriatus*, *Arius froggatti*, *A. spatula*, *Hemipimelodus dayi*, *H. crassilabris*, *Engraulis scratchleyi* and *Corica papuensis*; of the remaining thirteen species ten have not, so far as we know, been recorded by previous authors from the south-east coast of New Guinea: these ten are as follows:—*Ambassis agrammus*, *Synagris notatus*, *Lethrinus mahsenoides*, *Gazza minuta*, *Eleotris porocephalus*, *E. butis*, *E. gyrinoides*, *Periophthalmus schlosseri*, *Chatöessus nasus*, and *Cyrtus gulliveri*, of which latter we give a full description on account of the many errors in that of Count Castelnau. The remaining three are *Toxotes jaculator*, *Gerres abbreviatus*, and *Chætodon lineolatus*, for the last of which we are indebted to Mr. Peter Henderson, chief officer of the Governor Blackall, who picked it up at Port Moresby.

AMBASSIS GIGAS. *sp. nov.*

B. vi. : D. 7. 1/12 : A. 3/11 : V. 1/5 : P. 15 : C. 17 : L. lat. 39 : L. trans. 6/13.

Length of head $3\frac{1}{2}$, of caudal fin 4, height of body $2\frac{1}{2}$ in the total length. Diameter of eye $3\frac{5}{6}$ in the length of head, $\frac{3}{4}$ of a diameter from the end of snout, and $\frac{5}{9}$ of a diameter apart. Lower jaw the longer. Upper surface of head deeply concave, owing to an abrupt rise from above the last third of the eye to the root of the dorsal fin : the maxilla reaches to the middle of the orbit. Vertical limb of preopercle entire ; lower double edge serrated, the upper more coarsely so, the denticulations at the angles being very strong in both : interopercle finely serrated posteriorly ; pre-orbital with its lower edge serrated, and with a raised ridge bearing one or two serrations superiorly : two small spines at the postero-superior angle of orbit. Villiform teeth in the jaws, vomer, and palate, the outer row in the former enlarged ; no lingual teeth. Second dorsal spine very strong, rather longer than the head without the snout ; second anal spine much longer and stronger than the third, more than the head behind the eye. The last spine of the first dorsal is $\frac{5}{8}$ of the spine of the second dorsal, and is attached to it throughout $\frac{2}{3}$ of its own length. Part of the outer ventral ray is filiform, and reaches to beyond the origin of the anal : the pectorals are equal in length to the second dorsal spine : caudal forked. Lateral line continuous. Cheeks and opercles scaly. *Colors*, yellowish above the lateral line, each scale with a brown marginal streak interrupted in the middle, giving the fish a more or less banded appearance : sides and lower parts silvery : vertical fins dusky ; a deep black spot behind the tip of the second dorsal spine.

The specimen measures over $8\frac{1}{2}$ inches ; its register number is B. 9958.

Hab. Strickland River, New Guinea.

SCOLOPSIS MACROPHTHALMUS. *sp. nov.*

B. V.: D. 10/9: A. 3/7: V. 1/5: P. 16: C. 17: L. lat. 38: L. trans. 4/15.

Length of head $3\frac{9}{10}$, of caudal fin $4\frac{3}{10}$, height of body $3\frac{1}{6}$ in the total length. Eyes large, their diameter $2\frac{3}{5}$ in the length of the head, $\frac{3}{4}$ of that of the snout, and $\frac{5}{8}$ of the flattened interorbital space. Cleft of the mouth somewhat oblique; the maxilla reaches to below the front margin of the orbit. Preorbital with a strong spine directed backwards, and two smaller ones in front of it. Vertical limb of the preopercle with strong simple denticulations, those on the produced angle being the coarsest; opercle with a distinct spine. Teeth in the jaws small, acute, and separated; those in front of the upper jaw rather longer and curved. Dorsal spines moderate, the third and fourth equal and longest, about $\frac{1}{3}$ of the height of the body, and little more than the diameter of the eye; the fifth, sixth, and seventh rays longer than the spines: third anal spine longer and as strong as the second, equal in length to the longest dorsal spine: pectorals as long as the head: the ventrals do not quite reach to the anal: caudal forked, the upper lobe rather the longer. Upper part of the head scaly as far as the front margin of the eyes. *Colors*, olive-brown, each scale silvery at the base, and with numerous round golden spots below the lateral line; occiput dark brown; cheeks silvery. A bluish tinge on the dorsal and anal fins; pectorals and ventrals brown; basal half of the lower caudal lobe with an orange tint; irides golden.

The specimen from which our description is taken was obtained at Port Moresby, and measures $8\frac{1}{4}$ inches in length. Its register number is B. 9965.

CYRTUS GULLIVERI.

Kurtus gulliveri, Casteln., Proc. Linn. Soc, N. S. W. ii., p. 233, and iii., p. 48.

D. 10/13: A. 2/43: V. 1/5: P. 14: C. 17.

Length of head $3\frac{4}{5}$, of caudal fin $4\frac{1}{5}$, height of body $3\frac{2}{5}$ in the total length. Diameter of eyes $6\frac{2}{3}$ in the length of the head, $1\frac{1}{3}$

in that of the snout, which is equal to the convex interorbital space. Upper profile of the head deeply concave, owing to a gibbous hump on the occiput which has a roughened bony edge, and immediately behind which the rudimentary dorsal spines commence. Jaws equal when the mouth is closed; maxilla reaches almost to the hind margin of the orbit. Preopercular edge double, both angles, but especially the lower, strongly spinous. Supraorbital ridge rough. Teeth villiform, very numerous in the jaws; in a narrow band on the vomer and palatines. The eight anterior dorsal spines rudimentary: ventrals reach to the anal rays; no horizontal spine between them: pectorals long, more than the head behind the front margin of the eye: caudal deeply forked. Scales minute, cycloid. Lateral line ceases below the fifth rudimentary dorsal spine. *Colors* diaphanous; a black spot on each side of the occipital hump, and a blotch of the same on the upper part of the opercle.

Length of specimen 15 inches; register numbr B. 9960.

Though from an examination of Count Castelnau's type specimen, which is fortunately contained in the collection of the Australian Museum (B. 9208), we have come to the conclusion that our fish is identical with his species, we have thought it best to redescribe it here, because of the numerous errors in the Count's description, which are so marked that, if we had not had the type specimen for comparison, we should assuredly have made a new species of our fish. Our specimen is from the Strickland River, New Guinea.

EQUULA SMITHURSTI. *sp. nov.*

D. 8/16 : A. 3/14 : V. 1/5 : P. 20 ; C. 19.

Length of head $4\frac{1}{6}$, of caudal fin $4\frac{1}{6}$, height of body $2\frac{2}{5}$ in the total length Diameter of eye $\frac{1}{3}$ of the length of the head, equal to that of the snout, and also to the interorbital space. Dorsal profile much more convex than the abdominal; upper jaw very protractile, the length of the hinder limb being $7\frac{1}{3}$ in the total length; interorbital cavity lanceolate, twice as long as broad. Supraorbital edge smooth; two small spines above the antero-superior angle of the eye, the inner one being the weaker, and placed further forward. Lower limb of the preopercle minutely serrated. Teeth small, closely set, in numerous rows. Dorsal spines weak, the first minute, the second greatly elongated, more than half the total length of the body, the fourth serrated at the base: second anal spine elongate, as long as the head: pectorals about equal to the distance between the snout and the hind margin of the eye: caudal forked. Scales minute, none on the chest or breast. Lateral line consists of 62 tubes, and ceases a short distance in front of the caudal fin. *Colors*, silvery, washed with blue on the back; sides of the head tinged with gold: snout, and a band from the upper angle of the eye to the opercle, black.

Length of type specimen inches; register number B. 9,962.

We are indebted to the energy of Mr. Henry Smithurst, chief engineer on board the Governor Blackall, for our specimen of this fine *Equula*. which he obtained at Hood Lagune, New Guinea, and with which we take this opportunity of connecting his name.

GOBIUS CONCAVIFRONS. *sp. nov.*

D. 6. 1/10: A. 1/8: V. 1/5: P. 17: C. 13: L. lat. 34: L. trans. 10.

Length of head $4\frac{1}{3}$, of caudal fin $4\frac{2}{3}$, height of body $5\frac{3}{4}$ in the total length. Diameter of eye $4\frac{1}{5}$ in the length of head, $1\frac{3}{8}$ in that of snout, and $\frac{2}{9}$ of a diameter apart; interorbital space convex: snout obtuse, its profile concave posteriorly. Head rather broader than high and twice as long as broad. Cleft of the mouth rather oblique, the lower jaw the longer. Maxilla barely reaches to the front margin of the eye. Several rows of teeth in both jaws, the outer row being considerably enlarged, especially in front. Third dorsal spine the longest, not so high as the body below it: the pectorals reach to the vent; the ventrals not so far: caudal moderately pointed; the anal commences beneath the fourth dorsal ray: anal papilla prominent, broader than long. Scales on the neck much smaller than those on the body; there are about 20 rows anterior to the dorsal fin. *Colors*, above light brown, many of the scales with a dark spot posteriorly; below grey: second dorsal and caudal spotted with dark brown, the latter tipped with the same.

The specimen measures four inches. Register number B. 9,950.

Hab. Strickland River

NEMATOCENTRIS NOVÆ-GUINEÆ. *sp. nov.*

D. 1/5. 1/14 : A. 1/22-23 : V. 1/5 : P. 14 : C. 18 : L. lat. 35 : L. trans. 11 : Vert. 36.

Length of head $4\frac{1}{2}$, of caudal fin $5\frac{1}{3}$, height of body $2\frac{4}{5}$ in the total length. Eyes with an overhanging bony lid; the diameter is $\frac{3}{10}$ of the length of the head, $\frac{5}{6}$ of that of the snout, and $\frac{5}{7}$ of the interorbital space, which is depressed, naked, and corrugated. Upper jaw slightly overhanging the lower; maxilla does not reach to the vertical from the anterior margin of the eye. Profile in front of the first dorsal very slightly concave. Cleft of mouth angular, the lower jaw closing into the angle of the upper. The entire jaws both outside and inside, closely set with short sharp recurved teeth: a patch of similar teeth on the head of the vomer; none on the palatines. Rays of the first dorsal filamentous, much longer than those of the second: anal commences opposite the origin of the first dorsal: ventrals inserted far behind the base of the pectorals, and reaching to the second anal ray: caudal forked. Scales with crenulated edges, covering the cheeks, opercles, and occiput behind the eyes, the anterior scales being very large and prominent; there are 17 scales in front of the first dorsal fin. *Colors* brownish, washed with silvery, many of the scales on the upper half of the body with a transverse reddish or golden stripe; the vertical fins are distinctly tinged with red, and there are indications of a round dark spot at the root of the caudal fin.

Described from a specimen $4\frac{3}{4}$ inches long; register number B. 9,947. Young examples are not nearly so high in the body as the adult.

Hab. Strickland River.

NEMATOCENTRIS RUBROSTRIATUS. *sp. nov.*

D. 1/5 1/11: A. 1/20 : V. 1/5 : P. 11 : C. 16 : L. lat. 32 : L. trans. 11 : Vert. 33.

Length of head 4½, of caudal fin 5, height of body 3⅖ in the total length. Eyes large, their diameter 2⅗ in the length of the head, ⅘ of a diameter from the end of the snout, and one diameter apart. Upper jaw slightly overhanging the lower ; maxilla does not reach to the front margin of the eye. Profile in front of the first dorsal straight, or if anything slightly convex. Both jaws entirely covered with closely set short sharp recurved teeth ; a similar patch on the head of the vomer. The rays of the second dorsal are equal in height to those of the first, which are not filamentous : the anal commences behind the origin of the first dorsal fin. Ventrals inserted far behind the base of the pectorals : caudal forked. Scales with crenulated edges, covering the cheeks, opercles, and upper part of the head to the middle of the interorbital space ; the anterior occipital scales large and prominent ; there are 15 scales in front of the first dorsal fin. *Colors*, silvery, with nine broad red longitudinal bands : the dorsals and anal dusky washed with red, the second dorsal having a basal row of brilliant crimson spots.

The specimen measures 2¾ inches ; its register number is B. 9,949.

Hab. Strickland River.

ARIUS FROGGATTI. *sp. nov.*

D. 1/7. O : A. 19 : V. 6 : P. 1/11 : C. 16.

Length of head 4⅔, of caudal fin 4⅔, height of body 5⅓ in the total length. Diameter of eye ⅕ of the length of the head, ⅝ of that of the snout, which is obtuse, and equal to the breadth of the bony interorbital space : upper profile of the head straight, gradually rising to the origin of the dorsal fin. The height of the head is ⅔ of its width, which is equal to the length excluding the snout : upper jaw a little longer than the lower ; width of the gape of the mouth 3¼ in the length of the head. Median longitudinal groove lanceolate, distinct, and deep ; occipital process triangular, nearly as broad as long: posterior part of the head densely granulated, as also are the edges of the longitudinal groove to opposite the hinder margin of the eye; there is also a granulose patch above the base of the pectoral. The maxillary barbel extends backwards to the base of the pectoral fin, the external mandibular not quite so far. Teeth in the lower jaw in two small angular patches, obtusely conical, and villiform; in the upper in two similar oval patches: palatines with two small oval patches of villiform teeth anteriorly. The dorsal fin is as high as the body, its spine as long as the head behind the posterior nostril; it is strongly granulated in front for two-thirds of its height, the remaining third and the entire back being weakly serrated; the length of the base of the adipose dorsal equal to that of the rayed: pectoral spine very strong, considerably longer than the dorsal spine, slightly roughened on the outside and strongly denticulated on the inside; they almost reach to the ventrals, which on their part just touch the anal fin: caudal deeply forked, the upper lobe the longer. There are numerous small round wart-like protuberances irregularly scattered over the sides of the body. *Colors*, steel-blue above, silvery below; a faint white spot on the occiput, and another in the posterior angle of the base of the rayed dorsal: base of the pectoral inside pale blue.

Length of specimen $11\frac{3}{4}$ inches; register number B. 9936.

We have much pleasure in dedicating this distinct species to Mr. Froggatt, on whom the whole burden of collecting the zoological specimens obtained during the late expedition of the *Bonito* seems to have fallen.

Hab. Strickland River.

ARIUS SPATULA. *sp. nov.*

D. 1/7. 0 : A. 20 : V. 6 : P. 1/9 : C. 17.

Length of head $\cdot 3\frac{9}{10}$, of caudal fin $5\frac{1}{3}$, height of body $6\frac{2}{3}$ in the total length. Diameter of eye $6\frac{1}{4}$ in the length of head, $\frac{3}{7}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head is $\frac{5}{8}$ of its width, which is equal to its length behind the middle of the eye. Upper jaw so much the longer that the lower closes entirely inside the maxillary teeth; the width of the gape of the mouth is $\frac{3}{7}$ of the length of the head. Median longitudinal groove shallow and indistinct; occipital process narrow, the width of its base being one half of its length, the sides are convergent behind to immediately in front of the basal bone of the dorsal fin round which they bend outwards; posterior part of the head granulated. The maxillary barbel reaches to the lower angle of the opercle, the external mandibular to the base of the pectoral. A broad band of obtusely conical villiform teeth on the jaws; the vomerine teeth form two small square patches, about their own length apart, and contiguous with the divergent palatine bands, which are thrice as long as broad. The dorsal fin is higher than the body, the spine as long as the head excluding the snout; it is roughened on its lower part anteriorly, weakly serrated on its upper half and posteriorly; the length of the base of the adipose dorsal is $\frac{1}{3}$ more than that of the rayed fin: the pectoral spine is shorter than that of the dorsal, and is weakly serrated on both sides: the ventrals do not reach the anal fin: caudal deeply forked. *Colors*, brown above, yellowish below; an oblong white spot on the middle of the occiput.

Length of the specimen described $12\frac{1}{3}$ inches; register number B. 9,937.

Hab. Strickland River.

This species appears to be allied to Bleeker's *Arius (Hemiarius) stormi*, but it differs greatly in its comparative measurements, in the arrangement and shape of its vomerine and palatine teeth, shape of the occipital process, &c.

HEMIPIMELODUS DAYI. *sp. nov.*

B. V. D. 1/7. O: A. 20-21: V. 6: P. 1/10: C. 17.

Length of head $4\frac{3}{8}$, of caudal fin $4\frac{1}{5}$, height of body $5\frac{3}{4}$ in the total length. Diameter of the eye $4\frac{1}{3}$ in the length of the head, $\frac{3}{4}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head nearly equals its width, which latter is equal to its length behind the centre of the orbit. Upper jaw the longer; the extent of the gape of the mouth is $\frac{3}{8}$ of the length of head. Upper posterior portion of the head closely granulated; median longitudinal groove lanceolate, gradually broadening to behind the eyes, whence after a slight convergence it suddenly opens out into a large oval patch: occipital process narrow, its breadth at the base not half its length. Opercle wider than high. All the barbels short and hairlike, the maxillary just touching the opercle. A few short sharp teeth irregularly scattered over the jaws; none on the vomer or palate. Dorsal fin higher than the body; its spine is weakly serrated in front and behind, and is ⅚ of the length of the head; base of the adipose dorsal ¾ of that of the rayed fin. Pectoral spine much shorter than that of the dorsal, smooth externally, but strongly denticulated on the inside, not reaching to the ventrals, which themselves barely reach the anal: caudal deeply forked. *Colors,* steel blue above, silvery on the sides, white below, the different tints blending imperceptibly together: a small white spot on the top of the head in the groove; fins light-colored.

The example described measures 9½ inches, and is entered in the register as B. 9938; its mouth was completely filled with young ones, having the yelk-bag still attached; the total length of the young fish is ⅔ of an inch, while the diameter of the yelk-bag, round which it was partially curled, is more than ⅓ of an inch at this stage of their existence; the adipose fin extends from opposite the anal fin to the caudal, with which it is confluent; the caudal also is but slightly forked. In a second example the young are much more developed, the yelk-bag has been absorbed, the caudal is more forked, and the adipose dorsal, though still large, has severed connection with it. In our smallest example, but 5 inches in length, the teeth are but little more numerous than in the specimen described. We name this fine species after Mr. Francis Day F.L.S., F.Z.S., &c., whose magnificent work on the fishes of India is indispensable to every student of Indo-Pacific ichthyology.

Hab. Strickland River.

HEMIPIMELODUS CRASSILABRIS. *sp. nov.*

D. 1/7. O: A. 18: V. 6: P. 1/12: C. 17.

Length of head $4\frac{3}{7}$, of caudal fin $5\frac{1}{3}$, height of body $5\frac{1}{3}$ in the total length. Eyes small, surrounded by a fleshy lid, their diameter $5\frac{5}{6}$ in the length of head, $\frac{4}{9}$ of that of snout, and $\frac{2}{3}$ of the interorbital space. The height of the head is but little less than its width, which latter is equal to its length, excluding the snout. Upper jaw overhanging the lower; the width of the gape of the mouth is $\frac{1}{4}$ of the length of the head; lips very thick. Occiput very slightly granulated, and only on the central ridge: median longitudinal groove almost obsolete; occipital process triangular, its breadth at the base nearly equal to its length. Opercle higher than wide. Barbels short, the maxillary not quite reaching to the gill-coverts: mandibulary barbels close together on the same transverse plane. Teeth in the jaws minute, scarcely piercing the gum; vomer and palatines toothless. Dorsal fin a little higher than the body; its spine is roughened in front, weakly serrated behind, and $\frac{7}{10}$ of the length of the head; the base of the rayed dorsal is $\frac{4}{5}$ of that of the adipose fin; pectoral spine a little shorter, but stouter, than the dorsal spine, equal to the width of the head; it is roughened outside, finely serrated inside; they do not nearly reach the ventrals, which themselves do not reach the anal; caudal deeply forked. *Colors*, brown above; yellowish-white below, the pectoral region silvery; top of the head with a round white spot between the eyes. Basal half of dorsal and anal fins yellowish-white, remainder of fins brown; inner surface of pectorals blue at the base.

Length of specimen, $7\frac{3}{4}$ inches; register number, B. 6961.

Hab. Strickland River.

ENGRAULIS SCRATCHLEYI. *sp. nov.*

D. 12: A. 38: V. 7: P. 13: C. 19: L. lat. 43: L. trans, 10.

Length of head $5\frac{1}{3}$, of caudal fin $4\frac{3}{4}$, height of body $4\frac{2}{3}$ in the total length. Diameter of eye $\frac{2}{7}$ of the length of head, $\frac{1}{2}$ of a diameter from tip of snout, and $\frac{3}{4}$ of a diameter apart. Snout pointed and overlapping the mouth. Maxilla enlarged beyond the angle of the mouth, not reaching to the gill-openings; upper jaw much longer than the lower. Teeth small, equal in both jaws; in a long narrow band on the palatines, and in two small isolated patches on the vomer. The dorsal fin commences somewhat nearer to the end of the snout than to the base of the caudal fin, and far behind the insertion of the ventrals. The anal commences entirely behind the dorsal, its anterior rays being much the longest: pectorals long, reaching to behind the base of the ventrals; the upper ray not produced. Caudal deeply forked. Scales large, deciduous. There are 27 carinated scales along the abdominal edge, 11 of which are posterior to the root of the ventrals. The colors seem to have been bluish on the back, silvery on the sides and beneath, a steel-blue band separating the two; the dorsal and caudal fins are clouded at the margins.

The example from which our description is taken measures $5\frac{2}{3}$ inches, and its register number is B. 9951. We have given the above specific name to this fine Anchovy in memory of the late Sir Peter Scratchley, first High Commissioner of New Guinea, whose death at this critical period in the affairs of the young colony is greatly to be deplored.

Hab. Strickland River.

CORICA PAPUENSIS. *sp. nov.*

D. 12-14: A. 21: V. 8: P. 11: C. 20: L. lat. 40: L. trans 10: Vert 43.

Length of head, of caudal fin, and height of body equal, and $5\frac{2}{5}$ in the total length. Diameter of eye $2\frac{5}{6}$ in the length of head, $\frac{1}{2}$ a diameter from the end of snout, and $\frac{2}{3}$ of a diameter apart. Body compressed and elongate. Maxilla reaches fully to the middle of the orbit. The origin of the dorsal is exactly midway between the point of the snout and the base of the tail, and rather behind the base of the ventrals; the anal commences far behind the termination of the dorsal; it has no detached rays; caudal forked, the lobes equal. Twelve serrated scales anterior to the ventral fins, the first of which is placed far behind the base of the pectorals; seven scales posterior to the ventrals. *Colors,* silvery, with the occiput and a broad longitudinal band steel-blue; tip of the upper caudal lobe blackish

The specimen described measures 3⅔ inches; register number in the Australian Museum B. 9955.

Hab. Strickland River.

CATALOGUE OF THE DESCRIBED COLEOPTERA OF AUSTRALIA.

By George Masters.

Part III.

Family. LUCANIDÆ.

Sub-Family. LUCANIDES.

RHYSSONOTUS. W. S. Macleay.

1929 LATICEPS Macleay. Proc. Linn. Soc., N. S. Wales, (2) X., p. 201.
Australia.

1930 JUGULARIS Westw. Trans. Ent. Soc., Lond., 3 Ser., I., 1863, p. 429, t. 14, f. 1.
Victoria.

1931 NEBULOSUS Kirby. Trans. Linn. Soc., XII., 1818, p. 411, t. 21, f. 4; Sturm., Cat., 1843, p. 345, t. 3, f. 9; W. S. Macleay, Hor. Ent., I., 1819, p. 98.
foveolatus Thunb. Mem. Ac. Petr., 1806, p. 199.
N. S. Wales, and Southern Queensland.

1932 PARALLELUS Deyrolle. Ann, Soc. Ent. Fr., 1881, (6), I., p. 238, t. 5, f. 3.
Australia.

CACOSTOMUS. Newman,

1933 SQUAMOSUS Newm. Mag. Nat. Hist., IV., 1840, p. 364; Westw., Trans. Ent. Soc., Lond., n. Ser., III,, 1855, p. 211, t. 11, f. 6-7.

rotundicollis Westw. Ann. Nat. Hist., VIII., 1841, p. 124.
Moreton Bay.

HOMOLAMPRIMA. Macleay.

1934 CRENULATA Macleay. Proc. Linn. Soc., N. S. Wales. 1885, (2). X., p. 200.
Clarence River, N. S. Wales.

NEOLAMPRIMA. Gestro.

1935 MANDIBULARIS Macleay. Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 139; Gestro., Ann. Mus. Genov., 1875, p. 999.
Herbert River, Queensland.

LAMPRIMA. Latreille.

1936 ÆNEA Fabr. Ent. Syst., I., 1, p. 2; Schreib. Trans. Linn. Soc., VI., p. 185, t. 20, f. 1; Burm., Handb., V., p. 414; Reiche., Rev. Zool., 1841, p. 50; Ann. Fr., 1853, p. 83; Macleay, Proc. Linn. Soc., N. S. Wales, 1885 (2), X., p. 130.
cuprea Latr. Nouv. Dict. Hist. Nat., XVII., p. 279.
subrugosa Hope. Cat. Lucan., 1845, p. 28.
var. *viridis* Erichs. Wiegm. Arch., 1842, I.. p. 109.
Norfolk Island.

1937 AURATA Latr. Nouv. Dict. Hist. Nat., XVII., p. 278; W. S. Macleay, Hor. Ent., I., p. 100; Macleay, Proc. Linn. Soc., N. S. Wales, 1885, (2). X., p. 131.
œnea Donov. Ins. Nov. Holl., t. 1; Guér. jc. régn. anim., p. 109, t. 27, f. 5; Casteln., Hist. Nat, II., p. 169.
fulgida Boisd. Voy. Astrol. Col., p. 231; Burm., Handb., V., p. 413; Dupont., Dej. Cat., 3 ed., p. 193.
Schreibersi Hope. Cat Lucan., p. 3.
New South Wales, (Darling River.)

1938 INSULARIS Macleay. Proc. Linn. Soc., N. S. Wales, 1885 (2), X., p. 137.
Lord Howe Island.

1939 KREFFTII Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 173; Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 134.

Gayndah, Queensland.

1940 LATREILLEI W. S. Macleay. Hor. Ent, I., p. 101; Burm., Handb., V., p. 411; Erichs., Wiegm. Arch., 1842, I., p. 108.
ænea Boisd. Voy. Astrol. Col., p. 228.
amplicollis Thoms. Ann. Fr., 1862, p. 410.
cærulea Donov. Ins. Nouv. Holl., t. 1.
var. *pygmæa* W. S. Macleay. Hor. Ent I., p. 101.
var. *Tasmaniæ* Hope. Cat. Lucan., p. 27; Macleay, Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 132.

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1941 MICARDI Reiche. Rev. Zool., 1841, p. 51; Macleay, Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 132.
purpurascens Hope. Cat. Lucan., 1845, p. 28.
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King George's Sound, Swan River, &c.; W. Australia.

1942 MINIMA Macleay. Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 138.

South Australia.

1943 NIGRIPENNIS Macleay. Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 137.

Australia.

1944 RUTILANS Erichs. Weigm. Arch., 1842, I., p. 170; Macleay, Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 134.

Tasmania; Victoria; New South Wales.

1945 SPLENDENS Erich. Weigm. Arch., 1842, p. 108; Macleay, Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 133.

Northern parts of N. S. Wales and Southern Queensland.

1946 VARIANS Burm. Handb., V., p. 415; Germ., Linn. Ent., III., 1848, p. 195; Macleay, Proc. Linn. Soc., 1885, (2), X., p. 133.
cultridens Burm. Handb., V., p. 416.
Micardi var. Reiche. Ann. Fr., 1853, p. 83.
South, and Western Australia.

1947 VIOLACEA Macleay. Proc. Linn. Soc., N. S. Wales, 1885, (2), X., p. 138.
Botany; New South Wales.

PHALACROGNATHUS. Macleay.

1948 MUELLERI Macleay. (Laprima.) Proc. Linn., Soc., N. S. Wales, 1885, (2), X., p. 135; 1885, (3), p. 474.
North Australia.

CLADOGNATHUS. Burmeister.

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North Australia and Torres Straits.

EURYTRACHELUS. Thomson.

1950 ARFAKIANUS Lansberge. CR. Soc. Ent. Belg., XXIII., p. CXVIII; Wat., Ann., 1885, p. 342.
Cape York, N. Australia.

DORCUS. W. S. Macleay

1951 CARBONARIUS Westw. Trans. Ent. Soc., 3 Ser., I., 1863, p. 515, t. 21, f. 3, a-e.
Australia,

1952 PELORIDES Westw. Trans. Ent. Soc., n. Ser., III., 1855, p. 200; l. c. 1863, t. 21, f. 2; Parry., Cat., p. 90, nr. 20.
Moreton Bay.

LISSAPTERUS. H. Deyrolle.

953 HOWITTANUS Westw. (Lissotus), Trans. Ent. Soc., 3. Ser., I., 1863, p. 513, t. 21, f. 1; Parry., Cat., p. 97, nr. 8; Westw., Trans, Ent. Soc., 1871, p. 369, t. 9, f. 7, a, b, c, d; H. Deyrolle, Trans. Ent. Soc., 1870, p. 98.
Victoria.

LISSOTUS. Westwood.

1954 CANCROIDES Fabr. Mant., I., p. 2; Oliv., Ent., I., 1, p. 18, t. 4, f. 11; Westw., Ent. Mag., V.. p. 267; Burm., Handb., V., p. 402; Westw., Trans. Ent. Soc., 1870, p. 371.
Tasmania.

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Australia.

1956 CURVICORNIS Boisd. Voy. Astrol. Col., p. 235; Reiche., Ann. Fr., 1853, p. 82; Latrl., Dej. Cat., 3 ed., p. 194.
Tasmania.

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Tasmania.

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Australian Alps; Victoria.

1959 LAUNCESTONI Westw. Trans. Ent. Soc., Lond., 1871, p. 365.
Tasmania.

1960 LATIDENS Westw. Trans. Ent. Soc., Lond., 1871, p. 363.
Maria Island; Tasmania.

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Australia.

1962 OBTUSATUS Westw. Ent. Mag., V., 1838, p. 267; Trans. Ent. Soc., n. Ser., III., 1855, p. 217; Burm., Handb., V., p. 402; Westw., Trans. Ent. Soc., Lond., 1875, p. 244.
Tasmania.

1963 OPACUS Parry. Trans. Ent. Soc., Lond., 1870, p. 97.
Tasmania.

1964 SUBCRENATUS Westw. Trans. Ent. Soc., Lond., 1871, p. 368.
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Australia.

HOPLOGONUS. Parry.

1966 SIMSONI Parry. Cist. Ent., 1876, II., p. 131, t. 1, figs. 1-3.
Tasmania.

SYNDESUS. W. S. Macleay.

1967 CORNUTUS Fabr. Syst. El., II., p. 377; W. S. Macleay, Hor. Ent., I., p. 104; Burm., Handb., V., p. 333; Lacord., Gen. Atl., t. 25, f. 3.
parvus Donov. Ins. N. Holl., t. 1, f. 4.
Australia, and Tasmania.

CERATOGNATHUS Westwood.

1968 ABDOMINALIS Parry. Trans. Ent. Soc., Lond., 1870, p. 99.
Moreton Bay, Queensland.

1969 MENTIFER Westw. Trans. Ent. Soc., Lond., 1863, p. 434, t. 15, f. 5, a-e.
Australia.

1970 NIGER Westw. Ent. Mag., V., 1838, p. 261, cum fig; Burm., Handb., V., p. 325.
furcatus Casteln. Hist. Nat., II., p. 174.
Australia and Tasmania.

1971 RUFIPENNIS Westw. Trans. Ent. Soc., Lond., 1872, p. 82, t. 2, f. 2.
King George's Sound, W. Australia.

1972 WESTWOODI Thoms. Ann. Fr., 1862, p. 433.
punctatissimus Westw. Trans. Ent. Soc., Lond.. 1863, p. 433, t. 15, f. 4.
Victoria.

NIGIDIUS. W. S. Macleay.

1973 TRILOBUS Westw. (Figulus). Ent. Mag., V., 1838, p. 263; W. S. Macleay, Hor. Ent., I., 1819, p. 108; Parry, Trans. Ent. Soc.. Lond., 1873, p. 343,
Australia.

FIGULUS. W. S. Macleay.

1974 LILLIPUTANUS Westw. Trans. Ent. Soc., n. Ser., III., 1855, p. 219, t. 12, f. 5.
clivinoides Thoms. Ann. Fr., 1862, p. 432.
Australia. (Widely distributed.)

1975 NITENS C. O. Waterhouse. Ent. Month. Mag., 1874, IX., p. 7.
New South Wales.

1976 REGULARIS Westw. Ann. Sc. Nat., 2 Ser., I., 1834, p. 120.
Australicus Thoms. Ann. Fr.. 1862, p. 432.
pacificus Dej. Cat., 3 ed., p. 194.
New South Wales and Queensland.

1977 SULCICOLLIS Hope. Cat. Lucan, 1845, p. 26.
Port Essington, N. Australia.

Sub-Family. PASSALIDES.

AULACOCYCLUS. Kaup.

1978 EDENTULUS W. S. Macleay. King. Survey, II., p. 439; Burm., Handb., V., p. 515.
cylindraceus Perch. Mon., p. 103, t. 7, f. 8.
furcicornis Boisd. Voy. Astrol. Col., 1835, p. 242; Fauvel., Bull. Soc., Normand, VII., 1862, p. 135; d'Urville, Dej. Cat., 3 ed., p. 195.
New South Wales, Victoria, Queensland.

1979 KAUPI Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 173.
Gayndah, Queensland.

1980 ROSENBERGI Kaup. Col. Heft., III., 1868, p. 7.
Percheroni, Kaup., Col. Heft., III., 1868, p. 8; Mon. des. Pas., 1871.
Moreton Bay.

1981 TERES Perch. Suppl., I., p. 39; Burm., Handb., V., p. 515.
Rope's Creek, &c., N. S. Wales.

TÆNIOCERUS. Kaup.

1982 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 174.
Gayndah, Queensland.

CAULIFER. Kaup.

1983 MACLEAYI Kaup. Mon. des Pas., 1871. Col. Heft. III., p. 20.
New South Wales.

LEPTAULAX. Kaup.

1984 TIMORIENSIS Perch. Suppl, I., p. 19, t. 78, f. 1; Burm., Handb., V., p. 473; Kaup., Mon., p. 33.
Australia.

PLESTHENUS Kaup.

1985 QUADRICORNIS Kaup. Prodr., I., p. 26; Mon., p. 40, t. 2, f. 4.
Australia.

ERIOCNEMIS. Kaup.

1986 LOTTINII Boisd. Voy. Astrol. Col., 1835. p. 243.
Australia.

MASTOCHILUS. Kaup.

1987 AUSTRALASICUS Perch. Suppl., I., p. 6, t. 77, f. 2.
Macleayi Kaup. Col. Heft., III., p. 20.
N. S. Wales, and Queensland.

1988 DILATATUS Dalm. Schönh., Syn. Ins., I. App., p. 144; Burm., Handb., V., p. 465.
Chevrolati Perch. Mon., p. 26, t. 2, f. 4.
crenistrius Boisd. Voy. Astrol. Col., 1835, p. 244.
Australia.

1989 IMPRESSICOLLIS Bohem. Res. Eugen., 1858, p. 40.
Sydney ?

1990 NITIDULUS Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II.. p. 174, Gayndah, Queensland.

1991 POLITUS Burm. Handb., V., p. 465.
dilatatus Perch. Mon., p. 29, t. 2, f. 6.
Tasmania,

1992 POLYPHYLLUS W. S. Macleay. King., Survey, 1827, II., p. 439; Burm., Handb., V.. p. 469.
hexaphyllus Boisd. Voy. Astrol. Col., p. 241; Dej. Cat., 3 ed., p. 194.
sexdentatus Eschsch. Nouv. Mem. Mosc., 1. p. 23; Perch. Mon, p. 28, t. 2, f. 5.
N. S. Wales, and Queensland.

1993 PUNCTICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II,, p. 175.
Gayndah, Queensland.

1994 RIGICEPS Hope. Cat. Lucan., 1845, p. 28.
Australia.

CETEJUS. Kaup.

1995 AUSTRALIENSIS Stoliczka. Journ. As. Soc., Beng., n. s., Part II,, 1873, p. 157 ; Kaup., Mon., 1871, p. 53.
Australia.

Family. SCARABÆIDÆ.

Sub-Family. COPRIDES.

CANTHONOSOMA. Macleay.

1996 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 176.
Gayndah ; Queensland.

CEPHALODESMIUS. Westwood.

1997 ARMIGER Westw. Trans. Ent. Soc., Lond., IV., p. 177, t. 8, f. 5 ; Lacord., Gen. Atl., t. 26, f. 5.
New South Wales.

1998 CASTELNAUI Harold. Col. Heft., 1868, p. 80.
Brisbane, &c. ; Queensland.

1999 LATICOLLIS Pascoe. Journ. of Ent., II., p. 27.
Queensland.

2000 MACLEAYI Harold. Col. Heft., III., 1868, p. 80.
Rockhampton, &c. ; Queensland.

2001 QUADRIDENS Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II , p. 186.
Moreton Bay, Wide Bay, Gayndah ; Queensland.

LABROMA. Sharp.

2002 HORRENS Sharp. Rev. Mag. Zool., 1873, (3), I., p. 263.
W. Australia.

HOMODESMIUS. Sharp.

2003 HAROLDI Sharp. Rev. Mag. Zool., 1873, (3). I., p. 265.
Rockhampton; Queensland.

EPILISSUS. Reiche.

2004 NIGER Lansberge. Col. Hefte, 1874, XII., p. 8.
Wide Bay, Queensland.

2005 USTULATUS Lansberge. Col. Hefte, 1874, p. 7.
Queensland.

TESSERODON. Hope.

2006 ANGULATUS Westw. Trans. Ent. Soc., Lond., IV., 1845, p. 116, t. 8, f. 2.
Swan River, W. Australia.

2007 HOLLANDIÆ Fabr. Syst. Ent., I., p. 65; Hope, Col. Man., I., p. 55, t. 3, f. 15; Westw., Trans. Ent. Soc., Lond., IV., 1845, p. 115.
Novæ Hollandiæ Oliv. Ent., I., (3), p. 174, t. 13, f. 117.
Australia.

2008 PICEUS Hope. Proc. Ent. Soc., 1841, p. 44; Ann. Nat. Hist., 1842, IX., p. 224; Westw., Trans. Ent. Soc., IV., 1845, p. 116.

MENTHOPHILUS. Castelnau.

2009 CARINATUS Reiche. (Aulacium). Rev. Zool., 1841, p. 211; Ann. Fr., 1842, p. 68, t. 5, f. 1.
Hollandiæ Boisd. Voy. Astrol. Col., p. 152; Casteln., Hist. Nat., II., p. 74, t. 4, f. 4; Lacord., Gen. Atl., t. 27, f. 1.
Australia.

2010 SUBSULCATUS Sharp. Rev., Mag, Zool., 1873, (3), 1, p. 264,
W. Australia.

2011 TUBERCULATUS C. O. Waterhouse. Ent. Month. Mag., 1874, X., p. 176.
Australia.

AULACOPRIS. White.

2012 **Reichei** White. Proc. Zool. Soc., 1859, p. 118, t. 58, f. 5; C. O. Waterh., Trans. Ent. Soc., 1874, p. 536.
New South Wales, and Queensland; ? Victoria.

COPRÆCUS. Reiche.

2013 **hemisphæricus** Guér. Jc. Règn. Anim., p. 76, t. 21, f. 3; Reiche, Ann. Fr., 1842, p. 72, t. 5, f. 2; Westw., Trans. Ent. Soc., IV.; 1845, p. 114, t. 8, f. 3.
Australia.

MONOPLISTES. Lansberge.

2014 **Haroldi** Lansb. Col. Hefte., 1874, XII., p. 9.
W. Australia.

TEMNOPLECTRON. Westwood.

2015 **læve** C. O. Waterh. Ent. Month. Mag., 1874, X., p. 175; Trans. Ent. Soc., 1874, p. 527.
Queensland.

2016 **rotundum** Westw. Trans. Ent. Soc., IV., p. 118, t. 8, f. 1.
Northern Queensland. Melville Island, &c,

2017 **tibiale** Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 177.
Gayndah; Queensland.

PLATYPHYMATIA. C. O. Waterhouse.

2018 **æneopicea** C O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 537.
Queensland.

2019 **calcaratus** Macleay. Trans. Ent. Soc., N. S. Wales. 1871, II, p. 178.
Merodontus calcaratus Macleay.
Pine Mountain; Gayndah, &c.; Queensland.

COPTODACTYLA. Burmeister.

2020 **glabricollis** Hope. Proc. Ent. Soc., 1841, p. 44; Ann. Nat. Hist., IX., 1842, p. 424.
Port Essington; N. Australia.

2021 SUBÆNEA Harold. Ann. Mus. Genov., 1877, X., p. 41.
Cape York; North Australia.

ONTHOPHAGUS. Latreille.

2022 ADELAIDÆ Hope. Proc. Ent. Soc., 1846, p. 146; Trans. Ent. Soc.. IV., 1847, p, 282
Adelaide, S. Australia.

2023 ANISOCERUS Erichs. Wiegm., Arch., 1842, I.. p. 155.
cupreoviridis Blanch, Voy. Pole. Sud. Zool., p. 100, t. 7, f. 12.
Tasmania.

2024 ASPER Macleay. Trans. Ent. Soc., N. S. Wales, 1864, I., p. 125.
Port Denison, Cleveland Bay, &c., Queensland.

2025 ATROX Harold. Col. Hefte., 1867, II., p. 27.
Queensland.

2026 AURITUS Erichs. Wiegm., Arch., 1842, I., p. 156; Latrl., Dej. Cat., 3 ed., p. 157; Blanch., Voy., Pole. Sud. Ent., p. 98.
cereus Hope. Proc. Ent. Soc., 1846, p. 146; Trans. Ent. Soc., IV., 1847, p. 282.
umbraculatus Hombr. et Jacquin. Atl., t. 7, f. 8.
micans Sturm. Cat., 1843, p. 107.
Australia, and Tasmania.

2027 AUSTRALIS Guér. Voy. Coquille., 1830, Col., p. 78; Harold., Col. Hefte., II., 1867, p. 35.
capella Boisd. Voy. Astrol., p. 153.
N. S. Wales, Victoria, Tasmania.

2028 BIPUSTULATUS Fabr. Syst. Ent., p. 30; Oliv. Ent., I., 3, p. 174, t. 13, f. 118; Harold., Col. Heft., II., 1867, p. 34.
Australia.

2029 CAPELLA Kirby. Trans. Linn. Soc., XII., 1818, p. 398; Harold., Col. Heft., II., 1867, p. 29.
N. S. Wales. and Queensland.

2030 CAPITOSUS Harold. Col. Heft.. II., 1867, p. 30.
Cape York, N. Australia.

2031 CONSENTANEUS Harold. Col. Heft., II., 1867, p. 33.
granulatus Macleay. Trans. Ent. Soc., N. S. Wales, 1864, I., p. 124.
Port Denison, &c., Queensland.

2032 CONSPICUUS Macleay. Trans. Ent. Soc., N. S. Wales, 1864, I., p. 121.
Rockhampton; Port Denison, &c.; Queensland.

2033 CUNICULUS Macleay. Trans. Ent. Soc., 1864, I., p. 123; 1871, II., p. 179; Harold, Col. Heft., 1867, p. 35.
Northern parts of N. S. Wales and Queensland.

2034 CROTCHI Harold. Col. Heft., VIII., 1871, p. 115.
Australia.

2035 DECLIVIS Harold. Col. Heft., V., 1869, p. 85.
desectus .Macleay. Trans. Ent. Soc., N. S. Wales, 1871, II., p. 182.
New South Wales and Queensland.

2036 DISCOLOR Hope. Proc. Ent. Soc., 1841, p. 44; Ann. Nat. Hist., IX., 1842, p. 424.
Port Essington; N. Australia.

2037 DUNNINGI Harold. Col. Heft., V., 1869, p. 85.
Petersham, near Sydney.

2038 ERICHSONI Hope. Proc. Ent. Soc., 1841, p. 43; Ann. Nat. Hist., IX., 1842 p. 424.
inermis Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 183.
Gayndah, &c.; Queensland.

2039 EVANIDUS Harold. Col. Heft., V. 1869, p. 86.
Tasmania.

2040 FEROX Harold. Col. Heft., II., 1867, p. 26; Redtenb., Reis. Novar., II., p. 56, t. 2, f. 7.
inæqualis Dej. Cat., 3 ed., p. 156.
Swan River; W. Australia.

2041 FULIGINOSUS Erichs. Weigm. Arch., 1842, I., p. 156.
Tasmania.

2042 FURCATICEPS Masters.
furcatus Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 121 (name præocc.)
Port Denison, &c.; Queensland.

2043 GLABRATUS Hope. Proc. Ent. Soc., Lond., 1841, p. 44: Ann. Nat. Hist., IX., 1842, p. 424.
Port Essington; N. Australia.

2044 GRANULATUS Bohem. Res. Eugen., 1858, p. 48.
New South Wales, Victoria and Queensland.

2045 HAAGI Harold. Col. Heft., II., 1867, p. 37.
Australia.

2046 HOSTILIS Harold. Col. Heft., V. 1869, p. 81.
South Australia.

2047 INCORNUTUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 181.
Gayndah, Queensland.

2048 JUBATUS Harold. Col. Heft., V., 1869, p. 81.
South Australia.

2049 KINGI Harold. Col. Heft., V., 1869, p. 37.
Rockhampton, Queensland.

2050 LAMINATUS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 119.
Port Denison, &c., Queensland.

2051 LATRO Harold. Ann. Mus., Genov., 1877, X., p. 74.
Cape York, N. Australia.

2052 LUCIDICOLLIS Bohem. Res. Eugen., 1858, p. 45.
New South Wales.

2053 MACROCEPHALUS Kirby. Trans. Linn. Soc., XII., 1818, p. 398.
New South Wales.

2054 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 181.
Gayndah, Queensland.

2055 MNISZECHI Harold. Col. Heft., V., 1869, p. 80.
New South Wales.

2056 MUTATUS Harold. Berl. Zeit., 1859, p. 224.
hirculus Erichs. Wiegm. Arch., 1842, I., p. 157.
Tasmania, S. Australia, and Victoria.

2057 MUTICUS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 124.
Port Denison, &c., Queensland.

2058 NODULIFER, Harold. Col. Heft., 1867, p. 37.
divaricatus Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 179.
Gayndah, Rockhampton, &c., Queensland.

2059 OCELLIGER Harold. Ann. Mus., Genov., 1877, X., p. 75.
Cape York, N. Australia.

2060 PARVUS Blanch. Voy. Pole. Sud. Col., p. 101, t. 7, f. 13.
Raffles Bay, N. Australia.

2061 PENTACANTHUS Harold. Col. Heft., II., 1867, p. 24.
quadridentatus Hope. Proc. Ent. Soc. Lond., 1841, p. 43; Ann. Nat. Hist., IX., 1842, p. 423.
South Australia. Port Essington. ?

2062 PERPILOSUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 181.
Gayndah; Queensland.

2063 PEXATUS Harold. Col. Heft., V., 1869, p. 86.
South Australia.

2064 PICIPENNIS Hope. Proc. Ent. Soc., 1841, p. 44; Ann. Nat. Hist., IX., 1842, p. 424.
Port Essington; N. Australia.

2065 PLANICOLLIS Harold. Deutsche Ent. Zeit., XXIV., 1880, p. 350.
Somerset; N. Australia.

2066 POSTICUS Erichs. Weigm. Arch., 1842, I., p. 154.
flavolineatus Blanch. Voy. Pole. Sud. Ent., p. 97, t. 7, f. 7.
Tasmania and Victoria.

2067 PROMPTUS Harold. Col. Heft., V., 1869, p. 82.
Cape York; N. Australia.

2068 PRONUS Erichs. Weigm. Arch., 1842, I., p. 154.
Tasmania. Victoria. N. S. Wales.

2069 PUGNAX Harold. Col. Heft., III., 1868, p. 83.
Brisbane ; Queensland.

2070 PURPUREICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 123.
Port Denison ; Queensland.

2071 QUADRIPUSTULATUS Fabr. Spec. Ins., I., p. 31 ; Oliv., Ent. I., 3, p. 175, t. 15, f. 141 ; Montrouz, Ann. Soc. agr. Lyon., VII., 1857, I., p. 22 ; Harold, Col. Heft., II., p. 32.
Queensland.

2072 QUINQUETUBERCULATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 182.
Gayndah ; Queensland.

2073 RUBICUNDULUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 180.
Gayndah, Queensland.

2074 RUBRIMACULATUS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 122.
Port Denison, Gayndah, &c., Queensland.

2075 RUFOSIGNATUS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 122.
Port Denison, Queensland.

2076 RUGOSUS Kirby. Trans. Linn. Soc., IX., p. 398.
N. S. Wales, Victoria and S. Australia.

2077 SCHMELTZI Harold. Col. Heft., V., 1869, p. 84.
N. S. Wales.

2078 TABELLICORNIS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1863, p. 120.
Port Denison, Queensland.

2079 THOREYI Harold. Col. Heft., III., 1868, p. 83.
Australia.

2080 VILIS Harold. Ann. Mus. Genov., 1877, X., p. 75.
Cape York, N. Australia.

2081 VIRIDIOBSCURUS Blanch. Voy. Pole. Sud. Col., p. 99, t. 7, f. 11.
Raffles Bay, N. Australia.

Sub-Family. APHODIIDES,

APHODIUS. Illiger

2082 AUSTRALASIÆ Bohem. Res. Eugen., 1858, p. 50.
N. S. Wales.

2083 CANDEZEI Harold. Col. Heft., IV., 1868, p. 85.
South Australia.

2084 EROSUS Erichs. Weigm. Arch., 1842, I., p. 157; Nat. Ins., III., p. 880.

2085 GRANARIUS Linné., Syst. Nat., I., 2 p. 547.
Adelaidæ Hope. Proc. Ent. Soc., 1846, p. 146; Trans. Ent. Soc., IV., p. 284.
Australia, (Widely distributed), Introduced.

2086 HOWITTII Hope. Proc. Ent. Soc., 1846, p. 147; Trans. Ent. Soc., IV., 1847, p. 285; Harold., Berl. Zeit., 1861, p. 94.
Australasiæ Blanch. Voy. Pole, Sud., 1853, IV., p. 101, t. 7, f.14.
Victoria.

2087 LIVIDUS Oliv. Ent. I., 3, p. 86, t. 26. f. 222.
cincticulus Hope. Proc. Ent. Soc., 1846, p. 147; Trans. Ent. Soc., IV., 1847, p. 284.
spilopterus Germ. Linn. Ent., III., 1848, p. 189.
Australia. (Widely distributed.)

2088 TASMANIÆ Hope. Trans. Ent. Soc., IV., 1847, p. 285; Harold, Berl. Zeit., 1859, p. 217; 1862, p. 381.
longitarsus Redtb. Reis. Novar., II., p. 58.
Tasmania.

ATAENIUS. Harold.

2089 AUSTRALIS Harold. Col. Heft., 1875, XIII., p. 89.
South Australia.

PEDARIA. Castelnau.

2090 GEMINATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 183; Harold, Col. Heft., 1875, XIV., p. 211.
Aphodius geminatus Macleay.
Gayndah, Queensland.

AMMŒCIUS. Mulsant.

2091 CRENATIPENNIS Macleay. Trans. Ent. Soc., II., 1871, p. 184.
Gayndah, Queensland.

2092 NITIDICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 185.
Gayndah, Queensland.

2093 OBSCURUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 184.
Gayndah, Queensland.

2094 SEMICORNUTUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 184.
Gayndah, Queensland.

PROCTOPHANES. Harold.

2095 SCULPTUS Hope. Proc. Ent. Soc., 1846, p. 147; Trans. Ent, Soc., IV., 1847, p. 285; Harold, Berl. Zeit., 1861, p. 111.
Australia. Widely distributed.

Sub-Family. HYBOSORIDES.

PHÆOCHROUS. Castelnau.

2096 HIRTIPES Macleay. (Silphodes.) Trans. Ent. Soc., N. S. Wales, I., 1863, p. 125.
Port Denison, &c.; Queensland.

CÆLODES. Westwood.

2097 BIMACULATUS Macleay. Trans. Ent. Soc., N. S. Wales, 1863, I., p. 126.
Port Denison, &c.; Queensland.

Sub-Family. GEOTRUPIDES.

STENASPIDIUS. Westwood.

2098 NIGRICORNIS Westw. Ann. Nat. Hist., 1849, p. 144; Trans. Linn. Soc., XXI., p. 17, t. 3 f. 14.
New South Wales, Victoria, and S. Australia.

BOLBOCERAS. Kirby.

2099 ALBERTISI Harold. Ann. Mus. Genov., 1877, X., p. 103.
Cape York ; N. Australia.

2100 ANGULICORNE Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 362.
Port Curtis ; Queensland.

2101 ARMIGERUM Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 360.
Rockhampton ; Queensland.

2102 BAINBRIDGEI Westw. Mon., p. 16, t. 3, f. 3.
Swan River ; W. Australia.

2103 CAPREOLUS Westw. Mon., p. 15, t. 3, f. 8.
Swan River ; W. Australia.

2104 CARPENTARIÆ Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 364.
Sweer's Island ; N. Australia.

2105 CAVICOLLE Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 363.
South Australia.

2106 CORNICULATUM Westw., Mon., p. 17, t. 3, f. 13.
Swan River, W. Australia.

2107 CORNIGERUM Macleay. Trans. Ent. Soc., N. S. Wales, II., p, 363.
Swan River, W. Australia.

2108 CORONATUM Klug. Mon., p. 42, t. 2, f. 10.
Western Australia.

2109 DENTICOLLE Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 364.
Victoria River, or Peak Downs, Queensland.

2110 FRONTALE Guér. Mag. Zool., 1838, p. 51 ; Klug., Mon., p. 41, t. 2, f. 7.
latum Bainbridge. Trans. Ent. Soc., III., 1842, p. 80
serricolle Bainb. Trans. Ent. Soc., III., p. 80
Swan River, W. Australia.

2111 GAYNDAHENSE Macleay. Trans. Ent. Soc, N. S. Wales, II., 1871, p. 185.
Gayndah, Queensland.

2112 GLOBULIFORME Macleay. Trans. Ent. Soc. N. S. Wales, I., 1863, p. 127.
Port Denison, Queensland.

2113 KIRBYI Westw. Trans. Linn. Soc., Vol. 21, p. 13.
Tasmania.

2114 LACUNOSUM Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 361.
Sydney.

2115 LATICORNE Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 365.
South Australia.

2116 NEGLECTUM Hope. Proc. Ent. Soc., Lond., 1841, p. 43; Westw., Mon., p. 16, t. 3, f. 9.
Port Essington, N. Australia.

2117 PLANICEPS Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 365.
Sweer's Island, N. Coast.

2118 PROBOSCIDIUM Schreibers. Trans. Linn. Soc., 1802, p. 189, t. 20, f. 2; W. S. Macleay, Hor. Ent., I., p. 122; Westw. Mon., p. 13, t. 3, f. 1.
Australasiæ Kirby. Trans. Linn. Soc., 1818, p. 462, t. 23, f. 5.
N. S. Wales, Victoria, and S. Australia.

2119 PUNCTICOLLE Macleay. Trans. Ent. Soc., N. S. Wales, II., p. 361.
South Australia.

2120 QUADRICORNE Klug. Mon., p. 42, t. 2, f. 6.
Western Australia.

2121 RECTICORNE Guér. Mag. Zool., 1838, p. 49, t. 232, f. 1; Klug., Mon., p. 43, t. 2, f. 8.
hastiferum Bainbridge. Trans. Ent. Soc., 1842, III., p. 81.
var. *fissicorne* Bainb. Trans. Ent. Soc., 1842, III., p. 82.
Swan River, W. Australia.

2122 REICHEI Guér. Mag. Zool., 1838, p. 50; Westw., Mon., p. 14, t. 3, f. 3.
Kirbyi Hope. Proc. Ent. Soc., 1841, p. 43.
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TROX, Fabricius.

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N. S. Wales?

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Tasmania.

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Australia.

2133 CANDIDUS Harold. Col. Heft., IX-X., p 98.
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Queensland.

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Australia.

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King George's Sound, W. Australia.

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LIPAROCHRUS. Erichson.

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New South Wales.

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Australia.

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Sub-Family. GLAPHYRIDES.

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Sub-Family. MELOLONTHIDES.

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N. W. Australia.

CHILODIPLUS. Sharp.

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Cape York; N. Australia.

SYSTELLOPUS. Sharp.

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ATHOLERUS. Sharp.

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Swan River; W. Australia.

TOSOTARSUS. Sharp.

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Australia.

TRICHELASMUS. Sharp.

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pygmæa Waterh. Trans. Ent. Soc., I., 1836, p. 227; Burm., Handb., IV., 2, p. 118.
Australia.

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acanthopus Boisd. Voy. Astrol., 1835, Col., p. 202; Latreille., Dej. Cat., 3, ed., p. 180.
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Richmond River; N. S. Wales.

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New South Wales.

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South Australia?

OCNODUS. Burmeister.

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EPHOLCIS. C. O. Waterhouse.

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Endeavour River, Cape York, &c., N. Australia.

CALONOTA. Hope.

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Colymbomorpha lineata Blanch.
Western Australia.

PHYLLOCOCERUS. C. O. Waterhouse.

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XYLONYCHUS. Blanchard.

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Australia.

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2295 SERICEUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 189.
Gayndah, Queensland.

2296 STRIATUS Blanch. Cat. Coll. Ent., 1850, p. 104.
Swan River, W. Australia.

2297 SYLVICOLA Fabr. Syst. Ent., p. 39; Burm., Handb., IV., 2, p. 198.
convexus Boisd. Voy. Astrol., 1835. Col., p. 209; W. S. Macleay, Dej. Cat., 3 ed., p. 181.
N. S. Wales.

2298 TRIDENTATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 191.
Maryborough, Gayndah, &c., Queensland.

2299 TRISTIS Blanch. Cat. Coll. Ent., 1850, p. 104.
Swan River, W. Australia.

2300 UNICOLOR Masters.
concolor Macleay. (name præoc.) Trans. Ent. Soc., N. S. Wales, I., 1863, p. 129.
Port Denison; Queensland.

2301 UNIFORMIS Blanch. Cat Coll. Ent., 1850, p. 104.
Swan River; W. Australia.

2302 VALGOIDES Blanch Cat. Coll. Ent., 1850, p. 105.
Swan River; W. Australia.

2303 VESTITUS Blanch. Cat. Coll. Ent., 1850, p. 103; Voy. Pole, Sud., IV., p. 126, t. 8, f. 14.
Tasmania.

2304 XANTHOTRICHUS Blanch. Cat. Coll. Ent., 1850, p. 103.
New South Wales.

COLOBOSTOMA. Blanchard.

2305 RUFIPENNIS Boisd. Voy. Astrol., 1835, Col., p. 207; Dej. Cat., 3 ed., p. 181; Lacord., Gen., III., p. 202, note 1; Burm., Handb., IV., 2, p. 202.

MICROTHOPUS. Burmeister.

2306 CASTANOPTERUS Burm. Handb., IV., 2, p. 202.
Australia.

AUTOMOLUS. Burmeister.

2307 ANGUSTULUS Burm. Handb., IV.. 2, p. 203.
Tasmania.

COMOPHORUS. Blanchard.

2308 TESTACEIPENNIS Blanch. Cat. Coll. Ent., 1850, p. 106.
Australia.

SCITALA. Erichson.

2309 ÆNESCENS Burm. Handb., IV., 2, p. 233.
Australia.

2310 ARMATICEPS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 192.
Gayndah; Queensland.

2311 AUREORUFA Blanch. Cat. Coll. Ent., 1850, p. 113.
New South Wales.

2312 CHLOROTICA Gyllenh. Schön. Syn. Ins., I., (3), App., p. 93.
Australia.

2313 GLABRA Blanch. Cat. Coll. Ent., 1850, p. 113.
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2314 NIGROLINEATA Boisd. Voy. Astrol., 1835, Col., p. 206 ; W. S. Macleay, Dej. Cat., 3 ed. p. 181.
languida Erichs. Wiegm. Arch., 1842, I., p. 168 ; Burm., Handb., IV., (2), p. 232.
Tasmania.

2315 PRUINOSA Dalm. Anal. Ent., 1823, p. 53 ; Burm., Handb., IV., (2), p. 231.
Australis Boisd. Voy. Astrol., 1835, Col., p. 208.
geminata Boisd. Voy. Astrol., 1835, Col., p. 206 ; W. S. Macleay, Dej. Cat., 3 ed., p. 181.

2316 PULLATA Boisd. Voy. Astrol., 1835, Col., p. 207 ; Latreille, Dej. Cat., 3 ed., p. 181.
Australia.

2317 RORIDA Burm. Handb., IV., (2), p. 232.
Australia.

2318 RUGOSICEPS Blanch. Cat. Coll. Ent., 1850, p. 113.
New South Wales.

2319 RUGOSULA Harold. Col. Heft., V., 1869, p. 123.
pruinosa Blanch. Cat. Coll. Ent., 1850, p. 113.

2320 SERICANS Erichs. Wiegm. Arch., 1842, I., p. 167 ; Burm., Handb., IV., (2), p. 232.
Tasmania.

2321 SUTURALIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 192.
Gayndah ; Queensland.

HOMOLOTROPUS. Macleay.

2322 LURIDIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 193.
Gayndah, Queensland.

COLPOCHILA. Blanchard.

2323 CRASSIVENTRIS Blanch. Cat. Coll. Ent., 1850, p. 107
Swan River, W. Australia.

2324 GOULDI Hope. Ann. Nat. His., IX., 1842, p. 425.
Swan River, W. Australia.

2325 PUNCTULATA Blanch. Cat. Coll. Ent., 1850, p. 107.
N. S. Wales.

2326 ROEI Burm. Handb., IV., 2, p. 227,
King George's Sound. W. Australia.

HAPLONYCHA. Blanchard.

2327 ASTROLABEI Boisd. Voy. Astrol., 1835, Col., p. 194.
King George's Sound, W. Australia.

2328 BADIA Burm. Handb., IV., 2, p. 228.
Swan River, W. Australia.

2329 CILIATA Boisd. Voy. Astrol., 1835, Col., p. 195; W. S. Macleay, Dej. Cat., 3, ed., p. 179.
Australia.

2330 CRINITA Burm., Handb., IV., 2, p. 229.
Swan River, W. Australia.

2331 GAGATINA Burm. Handb., IV., 2. p. 228.
Australia.

2332 GIGANTEA Burm. Handb., IV., 2, p. 226.
Western Australia.

2333 IRIDESCENS Blanch. Cat. Coll. Ent.. 1850, p. 108.
N. S. Wales.

2334 OBESA Boisd. Voy. Astrol., 1835, Col., p. 193, t. 9, f. 6; Burm., Handb., IV., 2, p, 228; Durville, Dej. Cat., 3, ed., p. 179.
Tasmanica Homb. et Jacquin. Voy. Pole. Sud. Atl , t. 8, f. 8.
N. S. Wales, and Victoria.

2335 OBSCURICORNIS Blanch. Cat. Coll. Ent.; 1850, p. 108.
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2336 PECTORALIS Blanch. Cat. Coll. Ent., 1850, p. 108.
Australia

2337 PINGUIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 193.
Gayndah; Queensland.

2338 RUFICEPS Burm. Handb., IV., 2, p. 229.
Swan River; W. Australia.

2339 RUGOSA Burm. Handb., IV., 2, p. 229.
Australia.

2340 SCUTALIS Blanch. Cat. Coll., Ent., 1850, p. 108.
Australia.

2341 STRIATELLA Blanch. Cat. Coll. Ent., 1850, p. 108.
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2342 TASMANICA Germ. Linn. Ent., III., 1848, p. 191; Burm., Handb., IV., 2, p. 226.
South Australia, and Tasmania.

HETERONYX. Guérin.

2343 AGRESTIS Burm. Handb., IV., 2, p. 234.
Swan River; W. Australia.

2344 APHODIOIDES Blanch. Cat. Coll. Ent., 1850, p. 110.
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2345 AUSTRALIS Guér. Voy. Coquille, 1830, Col., p. 85, t. 3, f. 9.
hepaticus Erichs. Weigm. Arch., 1842, I., p. 163.
Tasmania.

2346 CASTANEUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 194,
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2347 CONCOLOR Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 196.
Gayndah; Queensland.

2348 DIMIDIATUS Erichs. Weigm. Arch., 1842, I., p. 143.
Tasmania.

2349 ELONGATUS Blanch. Cat. Coll. Ent., 1850, p. 109.
New South Wales.

2350 FUMATUS Erichs. Wiegm. Arch., 1842, I., p. 162.
Tasmania.

2351 GLABRATUS Erichs. Wiegm. Arch., 1842, I., p. 162.
Tasmania.

2352 GRANUM Burm. Handb., IV., (2), p. 237.
South Australia.

2353 HOLOMELÆNUS Blanch. Cat. Coll. Ent., 1850, p. 109.
New South Wales.

2354 HOLOSERICEUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 194.
Gayndah; Queensland.

2355 INFUSCATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 195.
Gayndah; Queensland.

2356 LATICEPS Burm. Handb., IV., (2), p. 237.
Australia.

2357 LATICOLLIS Blanch. Cat. Coll. Ent., 1850, p. 109.
New South Wales.

2358 NIGELLUS Erichs. Wiegm. Arch., 1842, I., p. 164.
obscurus Le Guillou. Rev. Zool., 1844, I., p. 224.
Tasmania.

2359 NIGRICANS Burm. Handb., IV., (2), p. 238.
Swan River; W. Australia.

2360 NIGRITA Blanch. Cat. Coll. Ent., 1850, p. 110.
New South Wales.

2361 OBESUS Burm. Handb., IV., (2), p. 236.
Swan River; W. Australia.

2362 OBLONGUS Blanch. Cat. Coll. Ent., 1850, p. 110,
New South Wales.

2363 OBSCURUS Blanch. Cat. Coll. Ent., 1850, p. 110; Voy. Pole. Sud., IV., Zool., p. 120, t. 8, f. 12.
Raffles Bay; N Australia.

2364 OVATUS Blanch. Cat. Coll. Ent., 1850, p. 110.
Tasmania.

2365 PALLIDULUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 195.
Gayndah; Queensland.

2366 PELLUCIDUS Burm. Handb., IV., (2), p. 236.
South Australia.

2367 PICEUS Blanch, Cat. Coll. Ent., 1850, p. 110.
N. S. Wales.

2368 PILOSELLUS Blanch. Cat. Coll. Ent., 1850, p. 110.
N. S. Wales.

2369 PILOSUS Blanch. Cat. Coll. Ent., 1850, p. III; Voy. Pole. Sud., IV., Zool., p. 121, t. 8, f. 13.
Raffles Bay, N. Australia.

2370 PLANATUS Burm. Handb., IV., 2, p. 237.
South Australia.

2371 PRÆCOX Erichs. Wiegm., Arch., 1842, I., p. 165; Blanch., Cat. Coll. Ent., 1850, p. 112; Burm., Handb., IV., 2, p. 238.
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Tasmania.

2372 PROXIMUS Burm. Handb., IV., 2, p. 235.
Swan River, W. Australia.

2373 PUBESCENS Macleay. Trans. Ent, Soc., N. S. Wales, II., 1871, p. 194.
Gayndah, Queensland.

2374 ROTUNDICEPS Blanch. Cat. Coll. Ent., 1850, p. 111.
N. S. Wales.

2375 RUBESCENS Blanch. Cat. Coll. Ent., 1850, p. 111.
Kangaroo Island, S. Australia.

2376 RUBRICEPS Blanch. Cat. Coll. Ent., 1850, p. 109.
N. S. Wales.

2377 RUFICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 196.
Gayndah, Queensland.

2378 RUFOMARGINATUS Blanch. Cat. Coll. Ent., 1850, p. 109.
N. S. Wales.

2379 RUGOSIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 196.
Gayndah, Queensland.

2380 SPADICEUS Burm. Handb., IV., 2, p. 238.
Swan River, West Australia.

2381 STRIATIPENNIS Blanch. Cat. Coll. Ent., 1850, p. III.
Tasmania.

2382 SUBFERRUGINEUS Burm. Handb., IV., 2, p. 235.
Swan River, W. Australia.

2383 SUBSTRIATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 195.
Gayndah ; Queensland.

2384 TEMPESTIVUS Erichs. Weigm. Arch., 1842, I., p. 164.
Tasmania.

2385 UNGUICULATUS Burm. Handb., IV., 2, p. 239.
Australia.

2386 UNICOLOR Blanch. Cat. Coll. Ent., 1850, p. 111.
Tasmania.

CAULOBIUS. Le Guillou.

2387 CERVINUS Boisd. Voy. Astrol., 1835, Col., p. 208 ; Burm., Handb., IV., 2, p. 207 ; Dej. Cat., 3 ed., p. 181.
Australia.

2388 MODESTUS Blanch. Cat. Coll. Ent., 1850. p. 112.
New South Wales.

2389 PUBESCENS Erichs. Weigm Arch., 1842, I., p. 164 ; Blanch., Voy. Pole. Sud. Zool., IV., p. 122.
villiger Hombr. et. Jacquin. Atl., t. 8, f. 17.
villosus Le Guillou. Rev. Zool., 1844, p. 224.
Tasmania.

2390 RUFESCENS Blanch. Cat. Coll. Ent., 1850, p. 112 ; Voy. Pole. Sud. Zool., IV., p. 123, t. 8, f. 11.
Tasmania.

ODONTONYX. Macleay.

2391 BRUNNEIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 197.
Gayndah ; Queensland.

HAPLOPSIS. Blanchard.

2392 LINEOLIGERA Blanch. Cat. Coll. Ent., 1850, p. 103.
grisea Burm. Handb., IV., 2, p. 206.
Swan River ; W. Australia.

2393 PILOSA Burm. Handb., IV., (2), p. 205.
Swan River; W. Australia.

EURYCHELUS. Blanchard.

2394 MARMORATUS Blanch. Cat. Coll. Ent., 1850, p. 112
New South Wales.

TELURA. Erichson.

2395 VITTICOLLIS Erichs. Wiegm. Arch., 1842, I., p. 169, t. 4, f. 6; Burm., Handb., IV., (2), p. 214; C. O. Waterh., Ann. Nat. Hist., 1877, (4), XIX., p. 256.
Tasmania.

DIPHYLLOCERA. White.

2396 KIRBYANA White. Grey. Journ., II., App., p. 461; Erichs., Wiegm. Arch., 1842, II., p. 230.
Western Australia.

NEPYTIS. Erichson.

2397 RUSSULA Erichs. Wiegm. Arch., 1842, I., p. 166; Burm., Handb., IV., (2), p. 240.
Tasmania.

PACHYTRICHA. Hope.

2398 CASTANEA Hope. Trans. Ent. Soc., 1843, III., p. 282, t. 13, f. 4, a-g; Burm., Handb., IV., (2), p. 242.
Western Australia.

2399 MINOR Sharp. Ent. Month. Mag., 1874, XI., p. 5.
Western Australia.

2400 MUNDA Sharp. Ent. Month. Mag., 1874, XI., p. 3.
Western Australia.

2401 PALLENS Sharp. Ent. Month. Mag., 1874, XI., p. 4.
Western Australia

2402 ROBUSTA Sharp. Ent. Month. Mag., 1874, XI., p. 4.
Western Australia.

2403 TECTA Sharp. Ent. Month. Mag., 1874, XI., p 5.
N. W. Australia.

RHIZOTROGUS. Latreille.

2404 Tasmanicus Burm. Handb., IV., 2, p 375.
Tasmania.

RHOPEA. Erichson.

2405 heterodactyla Germ. Linn. Ent., III., p. 191 ; Burm., Handb., IV., 2, p. 421.

South Australia and Victoria.

2406 Verreauxi Blanch. Cat. Coll. Ent., 1850, p. 160 ; Burm., Handb., IV., 2, p. 421.

LEPIDIOTA. Hope.

2407 squamulata C. O. Waterh. Trans. Ent. Soc., 1875, II., p. 201.

Swan River, W. Australia.

LEPIDODERMA. C. O. Waterhouse.

2408 albo-hirtum C. O. Waterh. Trans. Ent. Soc., 1875, II., p. 202.

Port Bowen, &c., Queensland.

HOLOPHYLLA. Erichson.

2409 furfuracea Burm. Handb., IV., 2, p. 426.
Australia.

PROCHELYNA. Erichson.

2410 heterodoxa Burm. Handb., IV., 2, p. 451.
South Australia.

2411 rubella Schauf. Nunq. Ot., 1882, III., p. 552.
Australia.

CŒLOTHORAX. Ancey.

2412 Oberthueri Ancey. Le Nat., 1880. II., p. 112.
South Australia

Sub-Family. RUTELIDES.

ANOPLOGNATHUS. W. S. Macleay.

2413 ABNORMIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 359.
Southern parts of Queensland.

2414 ANALIS Dalm. Schönh. Syn. Ins., I., 3, App., p. 61; Burm., Handb., IV., I., p. 440.
viriditarsis Leach. Zool. Misc., 1815, II., p. 44, t. 75, f. 2.
New South Wales, and Victoria.

2415 BOISDUVALI Boisd. Voy. Astrol., Col., p. 171.
pulchripes Burm. Handb., IV., I., p. 444.
lineatus Macleay. Proc. Ent. Soc., N. S. Wales, I., 1863, p. 18.
Queensland. (Widely distributed).

2416 BRUNNIPENNIS Gyllenh. Schönh. Syn. Ins., I., 3, App., p. 62; Burm., Handb., IV., I., p. 446.
castaneipennis Casteln. Hist. Nat., II., p· 126.
New South Wales.

2417 CHLOROPYRUS Drapiez. Ann. Sc. gén. Phys., Brux., 1819, II., p. 44, t. 16, f. 4.
nitidulus Boisd. Voy. Astrol., Col., p. 176; Burm., Handb., IV., I., p. 444; Durville, Dej. Cat., 3 ed., p. 171.
New South Wales.

2418 CONCOLOR Burm. Handb., IV., 2, p. 524.
Clarence River, &c.; N. S. Wales.

2419 DISPAR Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 357.
New South Wales.

2420 DUPONTI Boisd. Voy. Astrol., Col., p. 147.
Tasmania?

2421 FLAVIPENNIS Boisd. Voy. Astrol. Col., p. 176; Burm., Handb., IV., (1), p. 447; Dej. Cat., 3 ed., p. 171.
Blue Mountains, &c.; N. S. Wales.

2422 HIRSUTUS Burm. Handb., IV., (1), p. 447.
orichalcicus Sturm. Cat., 1843, p. 118.
Victoria.

2423 LONGIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 356.
Petersham, near Sydney.

2424 MONTANUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 356.
Monaro, Bathurst, &c.; N. S. Wales.

2425 NEBULOSUS Macleay. Proc. Ent. Soc., N. S. Wales, I., 1863, p. 19.
Rockhampton, Port Denison, &c.; Queensland.

2426 ODEWAHNII Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 358.
South Australia.

2427 OLIVIERI Dalm. Schönh. Syn. Ins., I., (3), App., p. 60; Burm., Handb., IV., (1), p. 441.
impressus Boisd. Voy. Astrol. Col., p. 173; W. S. Macleay, Dej. Cat., 3 ed., p. 171.
Sieberi Sturm. Cat., 1843, p. 118.
New South Wales, and Victoria.

2428 PALLIDICOLLIS Blanch. Cat. Coll. Ent., 1850, p. 222.
New South Wales.

2429 PARVULUS C. O. Waterh. Ent. Month. Mag., 1873, X., p. 75.
Eastern Australia.

2430 PECTORALIS Burm. Handb., IV., (1), p. 443.
Monaro, Bathurst, &c.; N. S. Wales.

2431 POROSUS Dalm. Schönh. Syn. Ins., I., (3), App., p. 63; Burm. Handb., IV., (1), p. 445.
inustus Kirby. Trans. Linn. Soc., XII., p. 405.
New South Wales, and Southern Queensland.

2432 QUADRILINEATUS C. O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 539.
Queensland.

2433 RETICULATUS Boisd. Voy. Astrol. Col., p. 169; Burm., Handb., IV., (1), p. 439.
impressifrons Boisd. Voy. Astrol. Col., p. 170.
New South Wales, and Victoria.

2434 RHINASTUS Blanch. Cat. Coll. Ent., 1850, p. 221.
Australia.

2435 RUBIGINOSUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p. 358.
New England, N. S. Wales.

2436 RUGOSUS Kirby. Trans. Linn. Soc., XII., p. 405; Burm., Handb., IV., 1, p. 442.
modestus Sturm. Cat., 1843, p. 118.
N. S. Wales.

2437 SUTURALIS Boisd. Voy. Astrol. Col., p. 178; Burm., Handb., IV., 1, p. 448.
Tasmania.

2438 VELUTINUS Boisd. Voy. Astrol. Col. p. 181; Burm., Handb., IV., 1., p. 445; Gory. Dej. Cat., 3, ed., p. 171.
N. S. Wales.

2439 VIRIDIÆNEUS Donov. Ins. N. Holl., 1805, t. 1; Leach. Zool. Misc., II., p. 44, t. 75, f. 1; Burm., Handb., IV., 1, p. 438.
cæsareus Billberg. Schönh. Syn. Ins., I., 3, App., p. 58.
Latreillei Gyllenh. Schönh. Syn. Ins., I., 3, App., p. 59.
N. S. Wales.

2440 VIRIDICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, 1873, p. 357.
Darling Downs, Queensland.

CALLOODES. White.

2441 ÆNEUS Waterh. Ent. Month. Mag.. 1868, nr., 49, p. 1.
Rockingham Bay, &c., Queensland.

2442 ATKINSONI Waterh. Ent. Month. Mag.. 1868, nr., 49, p. 9.
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2443 GRAYANUS White. Ann. Nat. Hist., XV., 1845. p. 38; C. O. Waterh. Trans. Ent. Soc., 1874, p. 539.
Gayndah, Rockampton, Port Denison, &c., Queensland.

2444 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, II., 1873, p 360.
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2445 PRASINUS Macleay. Trans. Ent, Soc., N. S. Wales, II., 1873, p. 359.
North Australia.

2446 RAYNERI Macleay. Proc. Ent. Soc., N. S. Wales, I., 1863, p. 19.
Port Denison, &c.; Queensland.

REPSIMUS. W. S. Macleay.

2447 ÆNEUS Fabr. Syst. Ent., p. 34; W. S. Macleay, King, Surv., II., p. 440; Burm., Handb., IV., 1, p. 449.
New South Wales, and Southern Queensland.

2448 MANICATUS Swartz. Schönh. Syn. Ins, I., 3, App., p. 64; Burm., Handb., IV., 1, p. 449.
dytiscoides W. S. Macleay. Hor. Ent., I., p. 144; Fischer, Mém. Mosc., VI., 1823, p. 264, t. 22, f. 8.
bracteatus Drapiez. Ann. Gén. Sc. Phys., Brux., I., p. 135, t. 7, f. 6.
var. *Browni* W. S. Macleay. Hor. Ent., I., p. 144.
New South Wales. Victoria?

2449 PURPUREIPES Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 197.
Gayndah: Queensland.

ANOPLOSTETHUS. Brullé.

2450 OPALINUS Brullé. Hist. Nat., III., p. 376; Guér., Voy. Favor., p. 60; Burm., Handb., IV., 1, p. 464.
King George's Sound, Swan River, &c., W. Australia.

2451 ROSEUS Blanch. Cat. Coll. Ent., 1850, p. 224.
opalinus Hombr. at Jacquin. Voy. Pole. Sud., t. 8, f. 1.
Raffles Bay, N. Australia.

EPICHRYSUS. White.

2452 LAMPRIMOIDES White. Journ. disc. App., II., p. 460; Burm., Handb., IV., 1, p. 465; IV., 2, p. 527; Lacord., Gen. Atl., t. 35, f, 2.
King George's Sound, W. Australia.

SCHIZOGNATHUS. Burmeister.

2453 MACLEAYI Fischer. Mém. Mosc., 1823, VI., p. 263, t. 22, f. 8. Boisd. Voy. Astrol. Col., 1835, p. 184; Burm., Handb., IV., 1, p. 462; Kirby, Dej. Cat., 3, ed., p. 171.
N. S. Wales.

2454 NIGRIPENNIS Blanch. Cat. Coll. Ent., 1850, p. 224.
N. S. Wales.

2455 PRASINUS Boisd. Voy. Astrol. Col., p. 184; Burm. Handb., IV., 1, p. 463, et, IV., 2, p. 527; Guérin., Voy. Favor., p. 62; Dej. Cat., 3, ed., p. 171.
N. S. Wales.

AMBLYTERUS. W. S. Macleay.

2456 CICATRICOSUS Gyllenh. Schönh. Syn. Ins., I., 3, App., p. 113.
geminatus W. S. Macleay. Hor. Ent., I., p. 142; Guér. Jc., Régn. anim. Ins., t. 24, f. 7, Burm., Handb., IV., 1, p. 457, et. IV., 2 p. 526.
N. S. Wales.

AMBLOCHILUS. Blanchard.

2457 BICOLOR Blanch. Cat. Coll. Ent., 1850, p. 225.
N. S. Wales.

SAULOSTOMUS. C. O. Waterhouse.

2458 VILLOSUS C. O. Waterh. Trans. Ent. Soc., Lond., 1878, p. 225.
Tasmania and Victoria.

HOMOTROPUS. C. O. Waterhouse.

2459 LURIDIPENNIS C. O. Waterh. Trans. Ent. Soc., Lond., 1878, p. 227.
Australia.

MESYSTOCHUS. C. O. Waterhouse.

2460 CILIATUS C. O. Waterh. Trans. Ent. Soc., Lond., 1878, p. 228.
Northern parts of N. S. Wales, a Southern Queensland.

Sub-Family. DYNASTIDES.

HETERONYCHUS. Burmeister.

2461 IRREGULARIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 199.
Gayndah; Queensland.

2462 PICIPES Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 198.
Gayndah; Queensland.

NOVAPUS. Sharp.

2463 CRASSUS Sharp. Rev. Mag. Zool., 1875, (3), III., p. 39.
South, and West Australia.

2464 SIMPLEX Sharp. Rev. Mag. Zool., 1875, (3), III., p. 40.
Western Australia.

PENTODON. Hope.

2465 GUBA Kirby. Trans. Linn. Soc., XII., 1818, p. 459, (gen. dub.)
Australia.

ISODON. Hope.

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New South Wales.

2467 CURTUS Burm. Handb., V., p. 107.
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Australia.

CHIROPLATYS. Hope.

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Australia?

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King George's Sound, W. Australia.

PIMELOPUS. Erichson.

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NEOCNEMIS. Sharp.

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TEINOGENYS. Sharp.

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DASYGNATHUS. W. S. Macleay.

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Australia.

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ORYCTES. Illiger.

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Gayndah, Queensland.

SCAPANES. Burmeister.

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XYLOTRUPES. Hope.

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CRYPTODUS. W. S. Macleay.

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Sydney; New South Wales.

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Peak Downs; Queensland.

2510 DIFFINIS Fairm. Bull. Soc. Ent. Fr., 1877, (5), VII., p. CXXVIII.; Journ. Mus., Godeffr., 1879, XIV., p. 87.
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South Australia.

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Tasmania.

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Western Australia.

SEMANOPTERUS. Hope.

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Gayndah, Queensland.

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Sub-Family. CETONIDES.

LOMAPTERA. Gory et Percheron.

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2534 Australis Wallace. Trans. Ent. Soc., Lond., 1868, 3 Ser., IV., p. 543.
Lizard Island, N. E. Coast.

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ISCHIOPSOPHA. Gestro.

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PHÆOPHARIS. Kraatz.

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N. W. Australia. (Nickol Bay).

DYSDIATHETA. Kraatz.

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Western Australia.

DYSECTODA. Kraatz.

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Queensland.

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Queensland.

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Cape York, N. Australia.

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Western Australia.

CAMILLA. Thomson.

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Port Denison, &c., Queensland.

LYRAPHORA. Kraatz.

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Australia.

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Victoria, and N. S. Wales.

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New South Wales, and Queensland.

ABLACOPUS. Thomson.

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Australia.

POLYSTIGMA. Kraatz.

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New South Wales.

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Victoria, N. S. Wales, and Queensland.

NEORRHINA. Kraatz.

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New South Wales, and Queensland.

MICROPŒCILA. Kraatz.

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Western Australia.

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New South Wales.

CACOCHROA. Kraatz.

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var. *concolor* Gory et Perch., Mon., p. 165, t. 28, f. 6; Kirby, Dej. Cat., 3 ed., p. 189.
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New South Wales.

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Port Denison, Rockhampton, &c.; Queensland.

APHANESTHES. Kraatz.

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Lizard Island, N. E. Coast.

CHLOROBAPTA. Kraatz.

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Victoria, and N. S. Wales

2574 FRONTALIS Donov. (Schizorrhina), Epit. Ins., t. 1, f. 2; Gory et Perch., Mon., p. 163, t. 28, f. 3; Burm., Handb., III., p. 536.
var. *Cunninghami* Gory et Perch., Mon., p. 162, t. 28, f. 2.
Australia. (Widely distributed.)

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King George's Sound; W. Australia.

CLITHRIA. Burmeister.

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Moreton Bay.

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Victoria, and N. S. Wales.

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Rockhampton, Port Denison, &c., Queensland.

TRICHAULAX. Kraatz.

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N. W. Australia. (Nickol Bay).

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Australia.

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New South Wales, and Victoria.

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New South Wales.

PLATEDELOSIS. Kraatz.

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New South Wales, and Southern parts of Queensland.

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Port Denison; Queensland.

SCHIZORRHINA. Kirby.

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New South Wales, and Queensland.

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Gayndah; Queensland.

2591 PULCHRA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 203.
Pine Mountain, Gayndah, &c.; Queensland.

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Australia

2593 VIRIDICUPREA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1871, p. 204.
Southern parts of Queensland.

DIAPHONIA. Newman.

2594 DORSALIS Donov. (Schizorrhina). Epit Ins,, t. 1, f. 1; Burm., Handb., III., p. 536.
Hookeri Swartz. Schönh. Syn. Ins., I., 3, App., p. 49; Gory et Perch., Mon., p. 172, t. 30, f. 4.
New South Wales, Victoria, S. Australia.

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Western Australia.

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South Australia.

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South Australia.

MELOBASTES. Thomson.

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South Australia.

TAPINOSCHEMA. Thomson.

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Rockhampton, Gayndah, &c., Queensland.

HEMICHNOODES. Kraatz.

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Esperance Bay, N. W. Australia.

PÆCILOCEPHALA. Kraatz.

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New South Wales, and Queensland.

METALLESTHES. Kraatz.

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Western Australia.

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Western Australia.

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South Australia. Borneo ?

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Australia.

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King George's Sound ; W. Australia.

CHONDROPYGA. Kraatz.

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Victoria ; Merimbula, N. S. Wales.

2610 HIRTICEPS Macleay, (Schizorrhina). Trans. Ent. Soc., N. S. Wales, II., 1871, p. 203.

Gayndah ; Queensland.

2611 NOTABILIS White, (Schizorrhina). Stokes Voy. Ins., I., p. 506, t. 1, f. 5.
Western Australia.

CETONIA. Fabricius.

2612 ADVENA Janson. Cist. Ent., II., p. 260.
Cape York; N. Australia.

2613 FASCICULATA Macleay Trans. Ent. Soc. N. S. Wales, I., 1862, p. 19.
Illawarra; N. S. Wales.

2614 FULGENS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 18.
Rockhampton; Queensland.

2615 TIBIALIS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 18.
Port Denison, Queensland.

GLYCYPHANA. Burmeister.

2616 BRUNNIPES Kirby. Trans. Linn. Soc., XII., p. 465; Schaum., Ann. Fr., 1849, p 263.
conspersa Gory et Perch. Mon., p 287, t. 56 f. 1; Burm. Handb., III., p. 353.
obscura Donov. Epit. Ins. (forte).
viridiobscura Dej. Cat., 2 ed., p. 173.
var. *fasciata* Fabr. Syst. Ent., I., p. 50; Burm. Handb., III., p. 354.
var. *perversa* Schaum. Ann. Fr., 1844, p. 371.
var. *stolata* Fabr. Syst. El., II., p. 153.
New South Wales and Queensland.

MICROVALGUS. Kraatz.

2617 CASTANEIPENNIS Macleay, (Valgus). Trans. Ent. Soc., N. S. Wales, II., 1871, p. 205.
Gayndah; Queensland.

2618 LAPEYROUSEI Gory, et Perch, (Valgus). Mon., p. 80, t. 9, f. 1; Burm. Handb., III, p. 727; Kraatz Deutsche, Ent. Zeit., 1883, XXVII., p. 374.
New South Wales and Victoria.

2619 NIGRINUS Macleay, (Valgus). Trans. Ent. Soc., N. S. Wales, II., 1871, p. 205.
Gayndah; Queensland.

Family. BUPRESTIDÆ.

CYRIA. Solier.

2620 ELATEROIDES Saund. Trans. Ent. Soc., Lond., 1872, p. 244.
Swan River; W. Australia.

2621 IMPERIALIS Donov. Epit. Ins. N. Holl., t. 7, f. 3; Fabr., Syst. El., II., p. 204; Lap. et Gory, Mon., I., p. 19, t. 5, f. 20.
var. *Australis* Boisd. Voy, Astrol., II., p. 62; Lap. et Gory, Mon., I., p. 20, t. 5, f. 21; Durville, Dej. Cat., 3 ed., p. 85.
var. *gagates* Hope. Bupr., p. 1.
Australia. Widely distributed.

2622 VITTIGERA Lap. et Gory. Mon., I., p. 21, t. 5, f. 22; Saund., Trans, Ent. Soc., 1868, p. 3, t. 1, f. 3; Hope, Bupr., p. 6.
King George's Sound, Swan River, &c., W. Australia.

DIADOXUS. H. Deyrolle. (MS.)

2623 ERYTHRURUS (*Stigmodera erythrura*), White, Stokes. Voy. I., p. 507, t. 1, f. 7; Saund., Trans. Ent. Soc., 1868, p. 4, t. 1, f. 5.
Anthaxia pistacina Hope. Bupr., p. 10.
New South Wales, Victoria, and S. Australia.

2624 SCALARIS Lap. et. Gory. Mon., I., p. 141, t. 35, f. 193; Saund., Trans. Ent. Soc., 1868, p. 4, t. 1, f. 4.
Anthaxia Erichsoni Hope. Bupr., p. 10.
New South Wales, Victoria, and S. Australia.

CHALCOPHORA. Solier.

2625 AJAX Saund. Trans. Ent. Soc., Lond., 1872, p. 245, t. IV., f. 6.

Chalcotænia Ajax Saund.

Queensland.

2626 ALBIVITTIS Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 214; Saund., Trans. Ent. Soc., Lond., 1868, p. 6, t. 1, f. 7.

Buprestis albivittis Hope.

New South Wales, Victoria, and Tasmania.

2627 AUROFOVEATA Saund. Journ. Linn. Soc., X., p. 334, t. 10, f. 6.

North West Australia.

2628 AUSTRALIS Thoms. Typ. Bupres. Mus. Thoms., 1878, p. 19.

Australia.

2629 AUSTRALASIÆ Saund. Trans. Ent. Soc., Lond., 1872, p. 248, t. 6, f. 6.

Chalcotænia Australasiæ Saund.

North West Australia.

2630 CUPRASCENS Waterh. Trans. Ent. Soc., Lond., 1875, p. 203.

Chalcotænia cuprascens Waterh.

Port Bowen; Queensland.

2631 ELONGATA Waterh. Trans. Ent. Soc., Lond., 1875, p. 203.

Chalcotænia elongata Waterh.

Port Bowen; Queensland.

2632 FAIRMAIREI Masters.

**Australis* Fairm. Journ. Mus., Godeffr., XIV., 1879, p. 96.

Chalcotænia Australis Fairm.

Rockhampton; Queensland.

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* Name previously used by Thomson.

2633 FARINOSA Fab. Syst. Ent., p. 219; Lap. et Gory, Mon., I. Chrysod, p. 21, t. 5, f. 28.
Buprestis farinosa Fab.
var. (?) *ventricosa* Oliv. Ent., II., gen. 32, p. 36, t. 6, f. 63, a-b.
North Australia.

2634 GIGAS Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 208; Saund., Trans. Ent. Soc., Lond., 1868, p. 5. t. 1, f. 6.
Chrysodema gigas Hope.
Queensland.

2635 GORYI Bohem. Res. Eugen., 1858, p. 59.
New South Wales.

2636 LÆTA C. O. Waterh. Ann. Mag. Nat. Hist., 1884, p. 371.
Queensland,

2637 LAMBERTI Lap. et Gory. Mon., I., p. 14, t. 4, f. 18; Saund., Trans. Ent. Soc., Lond., 1868, p. 7, t. 1. f. 8; Hope, Bupr., p. 9.
Chrysodema Lamberti Lap. et. Gory.
New South Wales.

2638 MARTINII Saund. Trans. Ent. Soc., Lond., 1872, p. 247.
Chalcotænia Martinii Saund.
North.West Australia.

2639 OCCIDENTALIS Waterh. Trans. Ent. Soc., Lond., 1875, p. 205.
Chalcotænia occidentalis Waterh.
West Australia.

2640 PISTOR Lap. et Gory. Mon., I., p. 25, t. 6, f. 33.
Chrysodema pistor Lap. et Gory.
Northern parts of Australia.

2641 PYRITOSA Bohem. Res. Eugen., 1858, p. 58.
New South Wales.

2642 QUADRIIMPRESSA Waterh. Trans. Ent. Soc., Lond., 1875, p. 204.
Chalcotænia quadriimpressa Waterh.

2643 QUADRISIGNATA Saund. Trans. Ent. Soc., Lond., 1872, p. 245, t. 6, f. 4.
Chalcotænia quadrisignata Saund.
Queensland.

2644 SALAMANDRI Thoms. Bull. Soc. Ent. Fr., (5), IX., p. CLVIII.
Chalcotænia Salamandri Thoms.
Australia.

2645 SUPERBA Saund. Trans. Ent. Soc., Lond., 1872, p. 246, t. 6. f. 2.
Chalcotænia superba Saund.
Nickol Bay, W. Australia.

2646 TELAMON Fairm. Journ. Mus. Godeffr., XIV., 1879, p. 96; Pet. Nouv., II., p. 166.
Chalcotænia Telamon Fairm.
Gayndah, Queensland.

2647 VENEREA Thoms. Arch. Ent., I., p. 431, t. 16, f. 7.
North Australia.

2648 VITTATA Waterh. Ann. Nat. Hist., (5), VII.. p. 462.
Chalcotænia vittata Waterh.
Queensland

NASCIO. Lap. et Gory.

2649 CARISSIMA Waterh. Ann. Mag. Nat. Hist., (5), IX., p. 51.
New South Wales.

2650 PARRYI Hope. Trans. Ent. Soc., Lond., IV., 1845, p. 103; Saund., Trans. Ent. Soc., Lond., 1868, p. 9, t. 1, f. 11.
Saundersi Hope. Trans. Ent. Soc., Lond, 1846, p. 213; White, Stokes, Voy., I., t. 1, f. 3.
New South Wales, Victoria, S. Australia and Tasmania.

2651 VETUSTUS Boisd. Voy. Astrol. Col. p. 85; Lap. et Gory, Mon., I., p. 2, t. 1, f. 1.
New South Wales and Victoria.

2652 VIRIDIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 239.
Southern parts of Queensland.

2653 XANTHURA Lap. et Gory. Mon., II., Agril., p. 30, t. 7, f. 38; Saund., Trans. Ent. Soc., Lond., 1868, p. 8, t. 1, f. 10; Hope, Bupr., p. 13.
Australia.

BUPRESTIS. Linné.

2654 AURANTIOPICTA Lap. et Gory. Mon., I., p. 132; Saund., Trans. Ent. Soc., Lond., 1868, p. 7, t. 4, f. 6.
Gulielmi White. Proc. Zool. Soc., 1859, p. 120, t. 59, f. 2.
decostigma Hope. Bupr., p. 7.

2655 DECEMNOTATA Lap. et Gory. Mon., I., p. 133.
aurantiopicta Lap. et Gory. Mon., I., t. 33, f. 183.
Australia.

2656 DISCOIDEA Lap. et Gory. Mon., I., p. 130, t. 33, f. 180.
Australia.

ASTRÆUS. Lap. et Gory.

2657 FLAVOPICTUS Lap. et. Gory. Mon., I., p. 2, t. 1, f. 1.
New South Wales.

2658 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales., II., 1872, p. 240.
Gayndah; Queensland.

2659 NAVARCHIS Thoms. Rev. and Mag. Zool., 1856, p. 115, t. 6, f. 2.
Australia.

2660 SAMOUELLEI Saund. Trans. Ent. Soc., Lond., 1868, p. 10, t. 1, f. 12; Hope, Bupr., p. 6.
New South Wales.

BUBASTES. Lap. et Gory.

2661 SPHÆNOIDA Lap. et Gory, Mon., I., p. 2, t. 1, f. 1.
Australia.

EURYBIA. Lap. et Gory.

2662 CHALCODES Lap. et Gory. Mon., II., p. 1, t. 1, f. 1; Saund., Trans. Ent. Soc., Lond., 1868, p. 11, t. 1, f. 13; Hope, Bupr., p. 12.
Swan River; W. Australia.

BRISEIS. Laferte.

2663 CONICA Lap. et Gory. Mon., I., p. 118, t. 30, f 162.
Australia.

CINYRA. Lap. et Gory.

2664 SPILOTA Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 219; Saund., Trans, Ent. Soc., Lond., 1868, p. 11, t. 4, f. 32.
Cisseis spilota Hope.
Australia.

TORRESITA. Deyrolle. (i. litt.)

2665 CHRYSOCHLORIS Lap. et Gory. Mon., I., Bupr., p. 122, t. 31, f. 169; Saund., Trans. Ent. Soc., Lond., 1868, p, 12, t. 1. f. 22.
Buprestis chrysochloris Hope. Bupr., p. 7.
New South Wales.

2666 CUPRIFERA Kirby. Trans. Linn. Soc., XII., p. 457; Lap. et Gory, Mon., I., p. 119, t. 30, f. 163; Saund., Trans. Ent. Soc., Lond., 1868, p. 13, t. 1, f. 23.
chrysoptera Latr. Dej. Cat., 3 ed., p. 90.
Buprestis cuprifera Kirby.
Anthaxia cuprifera Hope. Bupr., p. 10.
New South Wales.

MELOBASIS. Lap. et Gory.

2667 APICALIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 241.
Gayndah; Queensland.

2668 AZUREIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 240.

Gayndah, Rockhampton, &c. ; Queensland.

2669 CHRYSOPTERA Boisd. Voy. Astrol. Ent., II., p. 95.
Australia.

2670 COSTATA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 241.

Gayndah ; Queensland.

2671 CUPREOVITTATA Saund. Ent. Month. Mag., XIII., p. 155.
Gawler ; S. Australia.

2672 CUPRICEPS Kirby. Trans. Linn. Soc., XII., p. 457 ; Lap. et Gory, Mon., I., p, 119, t. 30, f. 164.

viridinitens Boisd. Voy. Astrol., Col., p. 94 ; Dej., Cat. 3 ed., p. 90 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 15, t. 1, f. 16.

var. *iridescens* Lap. et Gory. Mon., I., p. 121, t. 31, f. 167 ; Hope, Bupr., p. 8.

New South Wales.

2673 CYANIPENNIS Bohem. Res. Eugen., 1858, p. 59.

New South Wales.

2674 DILATATA Redtenb. Reis. Novar. Zool., II., p. 85.
New South Wales.

2675 GLORIOSA Lap. et Gory. Mon., I., p. 123, t. 31, f. 170 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 14, t 1, f. 15 ; Hope, Bupr., p. 7.

King George's Sound, Swan River, &c., W. Australia.

2676 HYPOCRITA Erichs. Weigm. Arch., 1842. I., p. 135.
Tasmania.

2677 IGNICEPS Saund. Ent. Month. Mag., XIII., p. 156.

S. W. Australia.

2678 LÆTA Saund. Ent. Month. Mag., XIII., p. 156.
Swan River ; W. Australia.

2679 **Lathami** Lap. et Gory. Mon., I., p. 120, t. 31, f. 166; Saund., Trans. Ent. Soc., Lond., 1868, p. 17, t. 1, f. 20; Hope, Bupr., p. 8.

2680 **metallifera** Hope. Bupr., p. 8; Saund., Trans. Ent. Soc., Lond., 1868, p. 16, t. 1, f. 18.
Swan River, W. Australia.

2681 **nervosa** Boisd. Voy. Astrol., Col., p. 77, t. 6, f. 8; Lap. et Gory, Mon., I., p. 121, t. 31, f. 168.
Tasmania and Victoria.

2682 **obscura** Macleay. Trans' Ent. Soc., N. S. Wales, II., 1872, p. 242.
Gayndah, Queensland.

2683 **prisca** Erichs. Wiegm. Arch., 1842, I., p. 135.
Tasmania.

2684 **propinqua** Lap. et Gory. Mon., I., p. 120, t. 30, f. 165; Saund., Trans. Ent. Soc., Lond., 1868, p. 15, t. 1, f. 17; Hope Bupr., p. 8.
Australia.

2685 **purpurascens** Fabr. Syst. El., II., p. 217.
purpureosignata Lap. et Gory. Mon,, I., p. 6, t. 2, f. 9.
New South Wales.

2686 **pyritosa** Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 214; Saund., Trans. Ent. Soc., Lond., 1868, p. 13, t. 1. f, 14.
Western Australia.

2687 **rubromarginata** Saund. Ent. Month. Mag., XIII., p. 156.
S. W. Australia.

2688 **Saundersi** Masters.
**costata* Saund. Ent. Month. Mag., XIII., p. 155.
Swan River, W. Australia.

2689 **sexplagiata** Lap. et Gory. Mon., I., p. 124, t. 31, f. 172.
New South Wales.

2690 **simplex** Germ. Linn. Ent., III., 1848, p. 175.
South Australia.

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* Name previously used by Macleay.

2691 SPLENDIDA Donov. Epit. Ins. New Holl., t. 7, f. 4; Saund., Trans. Ent. Soc., Lond., 1868, p. 14.
Anthaxia splendida Hope. Bupr., p. 10.
Australia.

2692 SUAVEOLA Germ. Linn. Ent., III., 1848, p. 176.
South Australia.

2693 SUPERBA Lap. et Gory. Mon., I., p. 123, t. 31, f. 171; Saund., Trans. Ent. Soc., Lond., 1868, p. 14, t. 1, f. 15a.
Anthaxia superba Hope. Bupr., p. 9.
Australia.

2694 VERNA Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 214; Saund., Trans. Ent. Soc., Lond., 1868, p. 17, t. 1, f. 19.
South Australia.

2695 VIRIDICEPS Saund. Ent. Month. Mag., XIII., p. 157.
N. S. Wales.

2696 VIRIDIS Saund. Ent. Month. Mag., XIII., p. 158.
Adelaide, S. Australia.

ANTHAXIA. Eschscholtz.

2697 CUPRIPENNIS Chevrol. Silb. Rev., V., p. 77.
N. S. Wales.

2698 CUPRIPES Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 243.
Gayndah, Queensland.

2699 NIGRA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 244.
Gayndah, Queensland.

2700 OBSCURA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 243.
Gayndah, Queensland.

2701 PURPUREICOLLIS Macleay. Trans. Ent. Soc, N. S. Wales, 1872, p. 243.
Gayndah, Queensland.

ANILARA. Deyrolle.

2702 ADELAIDÆ Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 216 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 19, t. 4, f. 12.
Anthaxia Adelaidæ Hope.
South Australia.

NEOCURIS. Deyrolle.

2703 ANTHAXIOIDES Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 336.
Adelaide, S. Australia.

2704 ASPERIPENNIS Fairm. Ann. Soc, Ent. Fr., (5), VII., p. 339.
Adelaide, S. Australia.

2705 CŒRULANS Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 335.
Sydney, N. S. Wales.

2706 CUPRILATERA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 336,
King George's Sound, W. Australia.

2707 DICHROA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 335.
Melbourne, Victoria.

2708 DISCOFLAVA Fairm. Ann. Soc. Ent. Fr., (5). VII., p. 339.
Australia.

2709 FORTNUMI Hope. Trans. Ent. Soc., Lond., IV., 1846. p. 216 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 19, t. 4, f. 10.
Anthaxia Fortnumi Hope.
South Australia.

2710 GRACILIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872. p. 242.
Gayndah, Queensland.

2711 GUERINI Hope. Trans. Ent. Soc., Lond., IV., 1845, p. 103 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 20, t. 4, f. 11.
Stigmodera Guerinii Hope.
South Australia.

2712 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 242.
Gayndah, Queensland.

2713 MONOCHROMA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 334,
South Australia.

2714 PAUPERATA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 337.
Adelaide, South Australia.

2715 SOROR Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 337.
Sydney, N. S. Wales.

2716 THORACICA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 340.
King George's Sound. W. Australia.

2717 VIRIDIMICANS Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 335.
King George's Sound.

CURIS. Lap. et Gory.

2718 AURIFERA Lap. et Gory. Mon.. II., p. 49, t. 11, f. 59; Saund., Trans. Ent. Soc., Lond., 1868, p. 21, t. 4, f. 8.
Anthaxia aurifera Hope. Bupres., p. 9.
caloptera W. S. Macleay. Dej. Cat., 3 ed., p. 89.
N. S. Wales, Victoria, and S. Australia.

2719 AUROVITTATA Bohem. Res. Eugen., 1858, p. 60.
Australia.

2720 BRACHELYTRA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 333.
Australia.

2721 CALOPTERA Boisd. Voy. Astrol. Col., p. 93.
Stigmodera caloptera Lap. et Gory. Mon., II., p. 48, t 11, f. 58; Saund., Trans. Ent. Soc., Lond., 1868, p. 21, t. 4, f. 7.
Anthaxia dives Hope. Bupr., p. 9.
N. S. Wales, and Victoria.

2722 CHLORIANTHA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 330.
King George's Sound, W. Australia.

2723 CORUSCA Waterh. Ann. Nat. Hist., (5), IX., p. 51.
Australia.

2724 DESPECTA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 328.
Champion Bay, W. Australia.

2725 FORMOSA Gestro. Ann. Mus. Genov.. IX., p. 443.
Queensland.

2726 INTERCRIBRATA Fairm. Ann. Soc. Ent. Fr., (5), VII,, p. 328.
Swan River, W. Australia.

2727 PERONI Lap. et Gory. Mon., II., p. 48, t. 11, f. 57.
Kangaroo Island, S. Australia.

2728 SPENCEI Mannerh. Bull. Mosc., 1837, VIII., p. 68.
Australia.

2729 SPLENDENS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 245.
Gayndah, &c., Queensland.

2730 VIRIDICYANEA Fairm. Ann. Soc. Ent. Fr., (5), VII., p. 332.
Rockhampton, Queensland.

NOTOGRAPTUS. Macleay.

2731 HIEROGLYPHICUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 245.
Gayndah, Queensland.

2732 SULCIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 244.
Gayndah, Queensland.

CASTALIA. Lap. et Gory.

2733 BIMACULATA Linn. Syst. Nat., I., 2, p. 662; Oliv., Ent., II., 32, p. 88, t. 12, f. 140.
var. *impustulata* Gory. Mon., IV., p. 189, t. 32, f. 184.
North Australia.

2734 BIPUSTULATA Boisd. Voy. Astrol. Col., p. 83; Lap. et Gory, Mon., II., p. 3, t. 1, f. 2; d'Urville, Dej. Cat., 3 ed., p. 89.
bimaculata Lap. et Gory. Mon., II., p. 2, t. 1, f. 1.
North Australia.

2735 GLOBITHORAX Thoms. Typ. Bupr. Mus. Thoms., 1878, p. 46
Australia.

2736 PACIFICA Boisd. Voy. Astrol. Ent., II., p. 83.
North Australia.

CONOGNATHA. Eschscholtz.

2737 NAVARCHIS Thoms. Rev. Zool., 1856, p. 115, t. 6, f. 2.
Tasmania.

JULODIMORPHA. E. Deyrolle.

2738 BAKEWELLI White. Ann. Nat. Hist., 1859, p. 290; Proc. Zool. Soc., 1859, p. 119, t. 59, f. 4. (*Stigmodera Bakewelli* White.)
South Australia.

2739 SAUNDERSI Thoms. Typ. Bupr. Mus. Thoms., p. 51.
Swan River, W. Australia.

STIGMODERA. Eschscholtz.

2740 ABDOMINALIS Saund. Journ. Linn. Soc., IX., 1868, p. 467, t. 9, f. 17.
N. S. Wales.

2741 ACUTICEPS Saund. Ins. Saund., III., 1, 1869, p. 19, t. 2, f. 29.
Swan River, W. Australia.

2742 ADDENDA Thoms. Typ. Bupr. Mus. Thoms., 1878, p. 52.
Australia.

2743 ADELPHA Thoms Typ. Bupr. Mus. Thoms., 1878, p. 52.
Australia.

2744 ÆNEICORNIS Saund. Journ. Linn. Soc., 1868, p. 472, t. 10, f. 28.
N. S. Wales.

2745 AFFINIS Saund. Journ. Linn. Soc., 1868, p. 461, t. 9, f. 4.
limbata Lap. et Gory, Mon., II., p. 36.
N. S. Wales.

2746 ALCYONE Thoms. Bull. Soc. Ent. Fr. (5), IX., p. LXXVII.
Australia.

2747 ALTEZZONA Thoms. Typ. Bupr. Mus. Thoms., 1878, p. 54.
Australia.

2748 AMABILIS Lap. et Gory. Mon. II., p. 19, t. 4, f. 18; Saund., Trans. Ent. Soc. Lond., 1868, p. 35, t. 3, f. 1; Hope. Bupr., p. 3.
King George's Sound, W. Australia.

2749 AMPHICHROA Boisd. Voy. Astrol. Col., p. 20; Saund., Trans. Ent. Soc. Lond., 1868, p. 45, t. 3, f. 20.
sexspilota Lap. et Gory. Mon. II., p. 35, t. 8, f. 40; Hope. Bupr., p. 4.
South Australia.

2750 AMPLIPENNIS Saund. Journ. Linn. Soc., 1868, p. 480, t. 10, f. 44.
Rope's Creek, &c., N. S. Wales.

2751 ANALIS Saund. Ins. Saund., III., 1, 1869, p. 7, t. 1, f. 10.
Moreton Bay, Queensland.

2752 ANCHORALIS Lap. et Gory. Mon., II., p. 26, t. 5, f. 26; Saund., Trans. Ent. Soc., Lond., 1868, p. 39, t. 8; Hope. Bupr., p. 5.
King George's Sound, Swan River, &c., W. Australia.

2753 ANDERSONI Lap. et Gory., Mon., II., p. 42, t. 3, f. 12; Hope. Bupr., p 5.
N. S. Wales, and Victoria.

2754 ASSIMILIS Hope. Trans. Ent. Soc., IV., 1846, p. 212; Saund. Trans. Ent. Soc., Lond., 1868, p. 47, t. 3, f. 26.
N. S. Wales, and Victoria.

2755 ATALANTA Thoms. Bull. Soc. Ent. Fr., 5, IX., p. LXXIX.
Australia.

2756 ATRICOLLIS Saund. Ins. Saund., III., 1. 1869, p. 22, t. 2, f. 33.
South Australia.

2757 ATRONOTATA C. O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 542.
Queensland.

2758 AUDAX Saund. Ins. Saund., III., 1, 1869, p. 5, t. 1, f. 7.
Australia.

2759 AURICOLLIS Thoms. Arch. Ent., I., p. 114.
Australia.

2760 AUSTRALASIA Lap. et Gory. Mon. II., p. 32, t. 7, f. 35; Saund. Trans. Ent. Soc., 1868, p. 37, t. 3, f. 4.
simulata Hope. Bupr., p. 3.
N. S. Wales, Victoria, S. Australia, and Tasmania.

2761 BALTEATA Saund. Ins. Saund., III., 1, 1869, p. 16, t. 2, f. 23.
N. S. Wales.

2762 BELLA Saund. Cat. Bupr. synon. et system., 1871, p. 71.
cruentata Lap. et Gory. Mon. I., p. 29, t. 6, f. 31.
N. S. Wales.

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2918 SAGITTARIA Lap. et Gory. Mon., II., p. 31, t. 7, f. 34.
Swan River; W. Australia.

2919 SANGUINEA Saund. Ins. Saund., III. (1), 1869, p. 4, t. 1, f. 5.
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2920 SANGUINEOCINCTA Saund. Journ. Linn. Soc., 1868, p. 461, t. 9, f. 3.
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2921 SANGUINIPENNIS Lap. et Gory. Mon., II., p. 16, t. 3, f. 13; Saund. Trans. Ent. Soc., Lond., 1868, p. 29, t. 2, f. 13; Hope. Bupr., p. 2.
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2922 SAGUINIVENTRIS Saund. Journ. Linn. Soc., 1868, p. 465, t. 9, f. 12.
South Australia.

2923 SANGUINOLENTA Lap. et Gory. Mon., II., p. 45, t. 10, f. 54.
Swan River; W. Australia.

2924 SANGUINOSA Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 210; Saund., Journ. Linn. Soc., 1868, p. 24, t. 1, f. 27.
South Australia.

2925 SAUNDERSI C. O. Waterh. Ann. Nat. Hist., (4), XVII., p. 70.
N. S. Wales.

2926 SCALARIS Boisd. Voy. Astrol. Col., p. 89; Dej., Cat., 3 ed., p. 89.
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South Australia.

2927 SECULARIS Thoms. Arch. Ent., I., p. 111.
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2928 SEMICINCTA Lap. et Gory. Mon., II., p. 19, t. 4, f. 17; Saund., Trans. Ent. Soc., Lond., 1868, p. 33, t. 2, f. 19; Hope, Bupr., p. 3.
N. S. Wales.

2929 SEMISUTURALIS Saund. Journ. Linn. Soc., 1868, p. 468, t. 10, f. 19.
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2930 SEPTEMGUTTATA C. O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 540.
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2931 SEXGUTTATA Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 29.
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2932 SEXMACULATA Saund. Journ. Linn. Soc., 1868, p. 465, t. 9, f. 13.
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2933 SIEBOLDI Lap. et Gory. Mon., II., p. 38, t. 8, f. 44; Saund., Trans. Ent. Soc., Lond., 1868, p. 45, t. 3, f. 21; Hope, Bupr., p. 4.
Western Australia.

2934 SIMILIS Saund. Journ. Linn. Soc., 1868, p. 463, t. 2, f. 7.
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2935 SIMULATA Lap. et Gory. Mon., II., p. 26, t. 5, f. 27; Saund., Trans. Ent. Soc., Lond., 1868, p. 37, t. 3, f. 5.
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Australia.

2936 SPENCEI Lap. et Gory. Mon. II., p. 13, t. 3, f. 9; Saund., Trans. Ent. Soc., Lond., 1868, p. 30, t. 2, f. 15; Hope. Bupr., p. 2.
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2937 SPILOTA Lap. et Gory. Mon., II., p. 24, t. 5, f. 24; Saund., Trans. Ent. Soc., Lond., 1868. p. 48, t. 3, f. 28; Hope., Bupr., p. 5.
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2938 SPINOLÆ Lap. et Gory. Mon., IV., p. 129, t. 22, f. 127.
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2939 SPLENDIDA Géhin. Bull. Soc. Mosel., 1855, p. 64, t. 2, f. 5.
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2940 STERNOCEROIDES Thoms. Bull. Soc. Ent. Fr. (5), IX., p. XIII.
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2941 STEVENSI Géhin. Bull. Soc. Mosel., 1855, p. 8, t. 1, f. 2.
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2942 STRAMINEA Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 25.
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2943 STRIGATA Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 27.
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2944 SUB-BIFASCIATA Saund. Journ. Linn. Soc., 1868, p. 479, t. 10, f. 43.
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2945 TESTACEA Saund. Ins. Saund., III. (1), 1869, p. 14, t. 2, f. 20.
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2946 THOMSONI Saund. Journ. Linn. Soc., 1868, p. 477, t. 10, f. 38.
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2947 THOMSONIANA Masters.
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2948 THORACICA Saund. Journ. Linn. Soc.. 1868, p. 464, t. 9, f. 11.
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2949 TIBIALIS C. O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 440.
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2950 TRICOLOR Kirby. Trans. Linn. Soc., XII., p. 455; Saund., Trans. Ent. Soc., Lond., 1868, p. 64.
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2953 TRIGUTTATA Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 28.
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2954 TRIMACULATA Saund. Journ. Linn. Soc., 1868, III., 1, p. 482, t. 10, f. 49..
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2955 UNDULATA Donov. Epit. Ins. N. Holl., t. 7, f. 5; Lap. et Gory, Mon., II., p. 24, t. 5, f. 23; Saund., Trans. Ent. Soc., Lond., 1868, p. 34, t. 2, f. 20.
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2956 UNICINCTA Saund. Trans. Ent. Soc., Lond., 1872, p. 252.
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2957 VARIABILIS Donov. Epit. Ins. N. Holl., 1805, t. 7, f. 1; Swartz, Schönh. Syn. Ins. App., 1817, p. 118, t. 6, f. 6; Lap et Gory. Mon., II., p. 11, t. 2, f. 7-8.
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var. *nigripennis* Lap et Gory. Mon., II., p. 15, t. 3, f. 12; Hope, Bupr., p. 2.
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2958 VARIOPICTA Thoms. Typ. Bupres. Mus. Thoms., 1878, p. 54.
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2959 VEGETA Hope. Trans. Ent. Soc., Lond., IV., 1847, p. 283; Saund., Trans, Ent. Soc., Lond., 1868, p. 45, t. 3. f. 19,
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2960 VERSICOLOR Lap. et Gory. Mon., II., p. 42, t. 9, f. 49.
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2961 VERTEBRALIS Boisd. Voy. Astrol. Col., p. 66.
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2962 VESCOEI Géhin. Bull. Soc. Mosel., 1855, p. 6, t. 2, f. 1.
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2964 VIOLACEA Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 23.
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2965 VIRGINEA Erichs. Wiegm. Arch., 1842, I., p. 135.
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2966 VIRIDICINCTA C. O. Waterh. Trans. Ent. Soc., Lond., 1874, p. 543.
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2968 VIRIDIVENTRIS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 27.
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2969 VITTATA Saund. Journ. Linn. Soc., 1868, p. 478, t. 10, f. 40.
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2970 VITTICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, I., 1862, p. 30.
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2971 WESTWOODI Saund. Journ. Linn. Soc., 1868, p. 464, t. 9, f. 10.
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2972 WILSONI Saund. Journ. Linn. Soc., 1868, p. 476, t. 10, f. 36.
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2976 regalis Lap. et Gory. Mon., II., p. 71, t. 16, f. 88; Saund., Trans. Ent. Soc., Lond., 1868, p. 22, t. 4, f. 9.
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2977 Mastersi Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 24.
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2978 Childreni Lap. et Gory. Mon., I., p. 2, t. 1, f. 1.
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2980 Australis Lap. et Gory. Mon., II., p. 34, t. 9, f. 52.
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2981 ATRATA Lap. et Gory. Mon. II., p. 58, t. 19, f. 79 ; Saund., Trans. Ent. Soc., Lond., 1868, p. 18, t. 4, f. 13 ; Hope. Bupr., p. 10.
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2983 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 247.
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ETHON. Lap. et Gory.

2987 AFFINIS Lap. et Gory. Mon. II., p. 4, t. 1, f. 5 ; Saund., Trans. Ent. Soc, Lond., 1868, p. 56, t. 4, f. 18.
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2989 FISSICEPS Kirby. Trans. Linn. Soc., XII., p. 458, t. 23, f. 4; W. S. Macleay, Dej. Cat. 3 ed., p. 92.
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N. S. Wales, and Queensland.

2990 LATIPENNIS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 247.
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Southern parts of Queensland.

2991 REICHEI Chev. Silb. Rev., V., p. 82.
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2992 ROEI Saund. Trans. Ent. Soc., Lond., 1868, p. 54, t. 4, f. 16; Hope. Bupr., p. 12.
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Australia.

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2994 ACUDUCTA Kirby. Faun. Bar. Am., IV., 1837, p. 162; Saund., Trans. Ent. Soc., Lond., 1868, p. 60, t. 4, f. 27.
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2995 ALBERTISI Gestro. Ann. Mus. Genov., IX., p. 357.
Cape York, N. Australia.

2996 ALBOSPARSA Lap. et Gory. Mon., II., p. 3, t. 1, f. 2.
Rockhampton, &c., Queensland.

2997 BICOLOR Lap. et Gory. Mon., II., p. 3, t. 1, f. 2.
N. S. Wales.

2998 CHALCOPTERUS Germ. Linn. Ent., III., p. 177.
South Australia.

2999 CRUCIATA Fab. Syst. Ent., p. 222; Oliv. Ent., II., gen., 32, p, 105, t. 7, f. 74.
Queensland.

3000 CUPREICOLLIS Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 219; Saund. Trans. Ent. Soc., Lond., 1868, p. 58, t. 4, f. 23.
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Cape York, N. Australia.

3002 CUPRIPENNIS Guér. Voy. Coq. Ins., p. 65; Lap. et Gory, Mon., II., p. 5, t. 1, f. 6; Chev. Silb. Rev. Ent. V., p. 77.
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3003 DIMIDIATA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 248.
Gayndah, &c., Queensland.

3004 DUODECEMMACULATA Fab. Syst. Eluth., II., p. 191.
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Gayndah, Queensland.

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stellulata Dalm, Anal. Ent., 1823, p. 54.
N. S. Wales, Victoria, and S. Australia.

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3011 NOTULATA Germ. Linn. Ent., III., p. 178.
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3012 NUBECULOSA Germ. Linn. Ent. Soc., III., p. 176.
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3014 ROSEOCUPREA Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 219; Saund., Trans. Ent. Soc., Lond., 1868, p. 61, t. 4, f. 28.
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3015 SCABIOSA Boisd. Voy. Astrol. Col., II., p. 96; Lap. et Gory. Mon., II., p. 5, t. 1, f. 6.
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3016 SIGNATICOLLIS Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 219; Saund., Trans. Ent. Soc., Lond., 1868, p. 57, t. 4, f. 21.
Port Essington, N. Australia.

3017 SIMILIS Saund. Trans. Ent. Soc., Lond., 1868, p. 59, t. 4, f. 25, *irrorata* Hope. Bupr., p. 8.
Australia.

3018 STIGMATA Lap. et Gory. Mon, II.. p. 3, t. 1, f. 3.
King George's Sound, W. Australia.

3019 SUTURALIS Saund. Trans. Ent. Soc., Lond., 1868, p. 60, t. 4, f. 26; Hope. Bupr., p. 12.
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3020 VIRIDI-AUREA Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 248.
Gayndah, Queensland.

CORÆBUS. Lap. et Gory.

3021 CHRYSOPYGIUS Germ. Linn. Ent., III., p. 178.
South Australia.

3022 MARMORATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 248.
Gayndah, Queensland.

3023 WESTWOODI Lap. et Gory. Mon., II., p. 15, t. 4, f. 24.
Tasmania.

DISCODERES. Chevrolat.

3024 TASMANICUS Germ. Linn. Ent., III., p. 179.
Tasmania.

PARACEPHALA. Thompson.

3025 MURINA Thoms. Typ. Bupr. Mus. Thoms., 1878, p. 83.
N. S. Wales.

3026 PISTACINA Hope. Trans. Ent. Soc., IV., 1846, p. 218.
Agrilus pistacinus Hope; Saund., Trans Ent. Soc., Lond., 1868, p. 63, t. 4, f. 31.
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South Australia.

AGRILUS. Stephens.

3027 AUROVITTATUS. Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 218; Saund., Trans. Ent. Soc., 1868, p. 63, t. 4, f. 30.
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3028 AUSTRALASIÆ Lap. et Gory. Mon., II., p. 21, t. 5, f. 25.
N. S. Wales.

3029 DEAURATUS Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 249.
Gayndah, Queensland.

3030 HYPOLEUCUS Lap. et Gory. Mon., II., p. 37, t. 8, f. 48; Saund., Trans. Ent. Soc., Lond., 1868, p. 62, t. 4, f. 29; Hope. Bupr., p. 13.

assimilis Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 217.

purpuratus Hope. Trans. Ent. Soc., Lond., IV., 1846, p. 217.

N. S. Wales.

3031 MASTERSI Macleay. Trans. Ent. Soc., N. S. Wales, II., 1872, p. 249.

Gayndah, Queensland.

PARACEPHALA. Thomson.

3032 MURINA Thoms. Typ. Bupres. Mus. Thoms., 1878, p. 83.

Sydney.

3033 PISTACINUS Hope. (Agrilus) Trans. Ent. Soc., Lond., IV., 1846, p. 218; Saund., Trans. Ent. Soc., Lond., 1868, p. 63, t. 4, f. 31.

canaliculatus Germ. Linn., Ent., III., p. 180.

South Australia.

Notes and Exhibits.

Mr. Ogilby exhibited specimens of *Hemipimelodus Dayi*, described in his Paper, showing the method, employed by the male fish, of hatching the young and preserving them from danger, by carrying them in his mouth; he remarked that this habit had been observed in several species of the nearly allied genera *Arius* and *Osteogeniosus*, both in India and South America.

Mr. Ramsay exhibited an Albino Bat from a cave in Jamaica, probably of the genus *Taphozous*.

Mr. Masters exhibited a chicken with four legs.

Mr. T. W. Edgeworth David, of the Geological Survey, exhibited a number of fossils from cores lifted by the Australian Diamond Drill Company, in the neighbourhood of Wallsend, Lake Macquarie. The specimens, which were collected by Mr. W. H. Smithers, showed very distinct and beautiful impressions of plants characteristic of the Upper Newcastle series, as *Glossopteris Browniana*, *Philotheca sp.*, &c. Although the diameter of the core was only 2¼ inches, the fragments of leaves were so perfectly preserved as to admit of the determination of their species. The cores were obtained at depths varying from a few feet to 660 feet below the surface.

Dr. Cox exhibited two New Caledonia Sling Stones, each of about 1lb. weight, of an oval shape and formed from stalactitic calcite. They were said to have been found in a hollow tree on the Bellenger River, but no explanation of their change of locality was offered.

WEDNESDAY, 24th FEBRUARY, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

The President announced that the Committee appointed to decide upon the merits of the Essays in competition for the Society's Prize of One Hundred Pounds for the best Original Essay on the Life-History of the Bacillus of Typhoid Fever, have reported that the only Essay which came before them, and which was distinguished by the motto "Advance Australia," is disqualified by the fact that it does not deal at all with the history of the Microbe in question; and that the Council had consequently determined that, as the prize had now been offered for two successive years, without bringing to the front the original investigation required, the offer should not be renewed, and that the Hundred Pounds given by a member for this purpose should be returned to the donor.

The President further announced that the donor had transferred the said sum to the credit of the general funds of the Society.

MEMBERS ELECTED.

Mr. W. H. Smithers, Craigend, Darlinghurst; Mr. Markey, Sydney; Mr. William Allan, Wingham, Manning River; Mr. S. MacDonnell, Bond-street, Sydney.

DONATIONS.

"Zoologischer Anzeiger." VIII. Jahrg., Nos. 211, 212. From the Editor.

"Monatliche Mittheilungen des Naturwissenschaftlichen Vereins des Regierungsbezirkes Frankfurt." III. Jahrg., Nos. 7 and 8, 1885. From the Society.

"Simple Tests for Minerals, or Every Man his own Analyst." By the Rev. Joseph Campbell, M.A. From the Author.

"Naturwissenschaftliche Rundschau, Wöchentliche Berichte über die Fortschritte auf dem Gesammtgebiete der Naturwissenschaften." I. Jahrg., No. 1. Braunschweig, 2nd January, 1886, (3 copies). From the Publisher.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CI., Nos. 20 and 21. November, 1885. From the Academy.

"The Provincial Medical Journal." Vol. V., No. 49. January, 1886. From the Editor.

"Victorian Naturalist." Vol. II., No. 10. February, 1886. From the Field Naturalists' Club of Victoria.

"Journal of the Cincinnati Society of Natural History." Vol. VIII., No. 4. January, 1886. From the Society.

"Science." Vol. VI., Nos. 150-152. Vol. VII., Nos. 153 and 154. December 18th, 1885—January 15th, 1886. From the Editor.

"University Circulars." Vol. V., No 45. December, 1885. From the Johns Hopkins University, Baltimore, U.S.A.

"Proceedings of the Canadian Institute." Vol. II., Fasciculus No. 3. October, 1884. From the Canadian Institute, Toronto.

"An Atlas of Practical Elementary Biology. By G. B. Howes, with a preface by Professor Huxley. From J. J. Fletcher, M.A., B.Sc.

"Transactions of the Entomological Society of London." Part 4, 1885. From the Society.

"Bulletin of the American Geographical Society." No. 2, 1885. From the Society.

"Feuille des jeunes Naturalistes." No. 183. 1st January, 1886. From the Editor.

"The Canadian Record of Science." Vol. II., No. 1, 1886. From the Natural History Society of Montreal.

"Papers and Proceedings of the Royal Society of Tasmania, for 1885." From the Society.

PAPERS READ.

NOTES FROM THE AUSTRALIAN MUSEUM.

DESCRIPTION OF A NEW *CORIS* FROM THE NEW HEBRIDES.

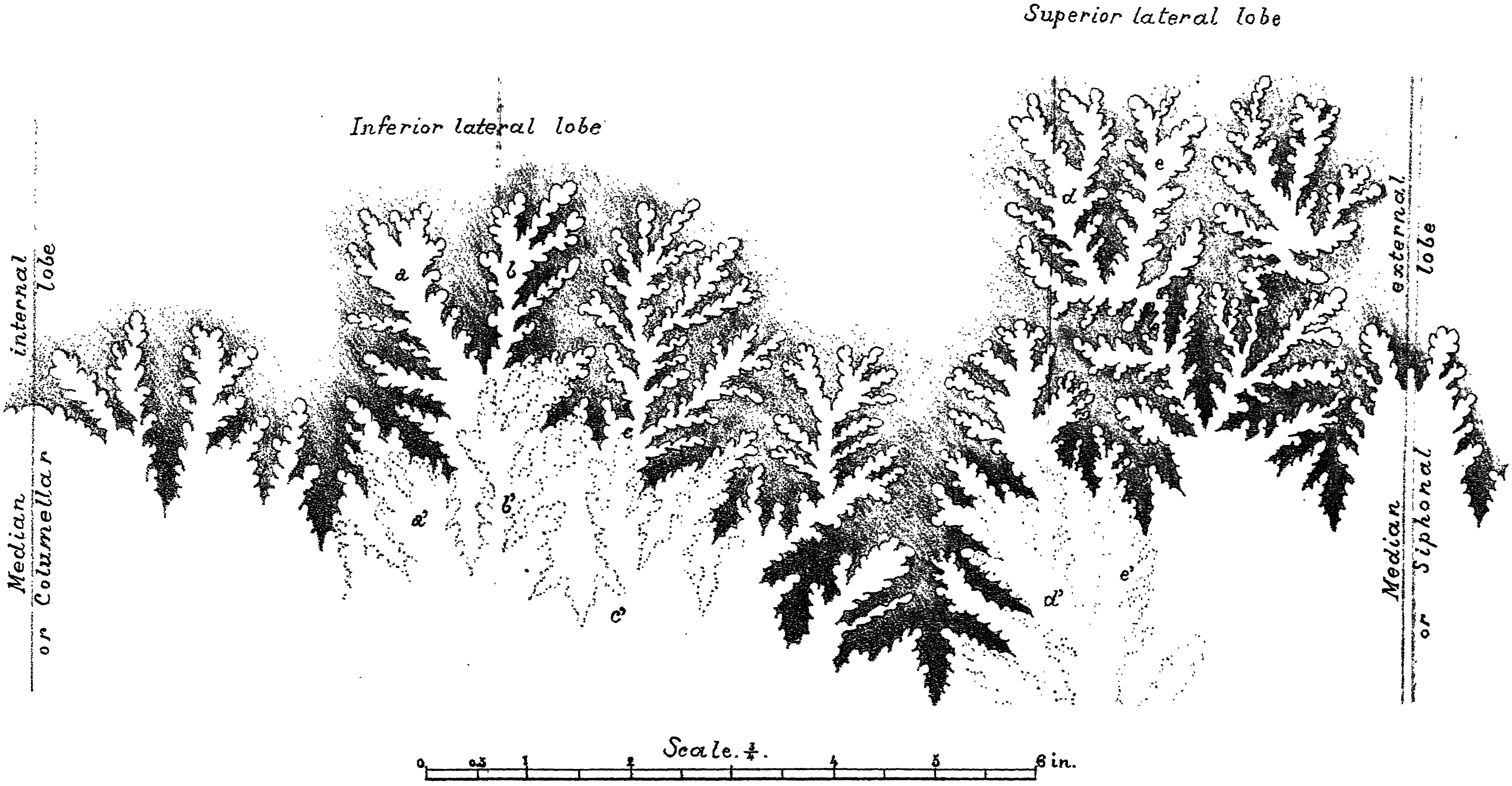
BY E. P. RAMSAY, F.R.S.E., AND J. DOUGLAS OGILBY.

CORIS VARIEGATA. sp. nov.

B. VI.; D. 9/12; A. 3/12; V. 1/5; P. 13; C. 14: L. lat. 63; L. tr.

Length of head $3\frac{2}{3}$, of caudal fin 6, height of body $4\frac{1}{3}$ in the total length. Diameter of eye $\frac{1}{4}$ of the length of the head, equal to that of the snout, eyes half a diameter apart. Jaws equal; maxilla extends to the vertical from the front margin of the eye. The two front teeth in either jaw elongate; those behind them grow gradually smaller towards the back; no posterior canine. The dorsal rays are somewhat longer than the spines, which increase in length from the front; the pectoral is $\frac{2}{3}$ of the length of the head; the ventral $\frac{1}{2}$ of the same; caudal rounded. *Colors*, anterior parts to the end of the pectoral rays pale yellowish-brown studded with numerous round dark reddish-brown, almost black spots largest on the opercles; the posterior part of the body uniform chestnut, the division being sharply marked and oblique. First eight dorsal spines light-colored with small chesnut spots; a large black pale-edged ocellus, which does not reach the margin of the fin, between the eighth spine and second ray; outside the pale edging are indications of a dark ring, which is more pronounced behind; a second ocellus covers the basal half of the four last rays; the outer half of the soft dorsal is dusky with a pale median longitudinal line, the free tips of each ray being white; the inner half is pale with two series of chesnut spots: the anal has also white tips to the rays; the outer part is dusky, gradually fading into a pale basal band; a single series of spots on its anterior two-thirds near the base: pectorals and ventrals immaculate: caudal with a broad black basal band, and a large central triangular spot of the same color, concave in front; this spot is broadly edged with white except at its lower anterior angle where it touches the margin of the fin.

The specimen measures $2\frac{2}{3}$ inches and forms part of a small collection brought from Aneiteum by Captain Braithwaite. Its register number is B. 9,566.



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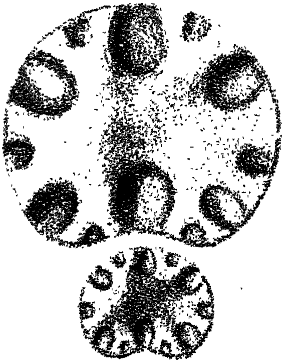

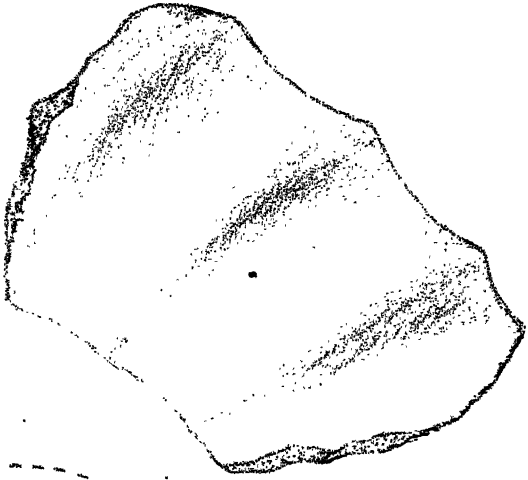

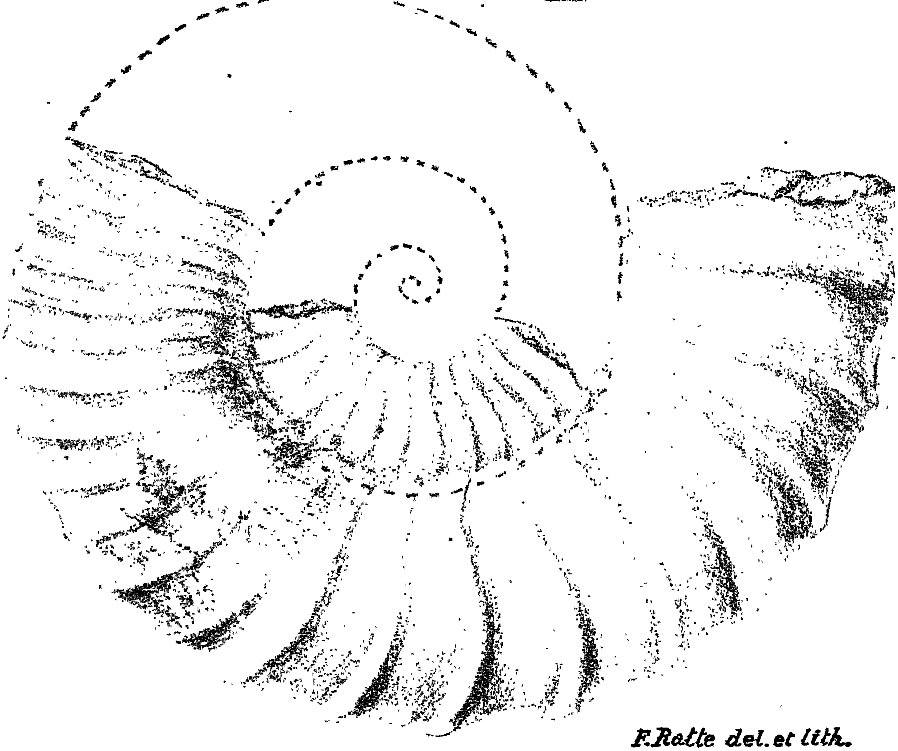

F.Ratte del. et lith.

NOTE ON *CRIOCERAS AUSTRALE, MOORE?* A LOWER CRETACEOUS FOSSIL FROM QUEENSLAND. (1)

BY FELIX RATTE, ING. ARTS ET MANUF., PARIS.

(PLATES I. AND II.)

This fossil, one of the largest of the Cephalopods, seems to be identical with the species described in the above paper, by Mr. Chas. Moore, in the Quarterly Journal of the Geological Society, under the title, "On Australian Mesozoic Geology and Paleontology, etc."

A part only of the fossil is represented by a reduced figure and the shape of the septa has not been recorded, in Moore's paper.

The present paper is accompanied by a drawing of the septa (Pl. 1), on a scale of about ¾, from a large specimen in the Australian Museum.

The difficulty of drawing the septa in ammonites and allied fossils, arises from the fact that, although the testa only may have been removed in some places showing its intersection with the septa, in other places the abrasion has removed a deeper layer, and also the ultimate sub-divisions of the septa, leaving a broader and more simple intersection. Moreover, the ramifications of one septum come so close to the next, and apparently intermix so much with it, that it is temporarily lost. This explains why slight additions of an approximative character have been necessary to complete the figure.

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(1) Quarterly Jour. Geol. Soc., May 1879, pl. XV., fig. 3.

However, some of the characters of the genus will be sufficiently illustrated, namely:—The septa divided into six lobes, the dorsal lobe only being formed of a par number of divisions, the other lobes formed, in general, of an impar number of divisions; and the dorsal siphuncle.

The description given by Chas. Moore deserves to be quoted beforehand.

"Shell very large, discoidal; whorls rounded, incurved, the " inner whorls rather closely fitting but separate. In the younger " state, as seen in the reduced figure, the shell possesses regular " rounded slightly curved ribs with intervening rounded sulci, " which increase in width with the age of the shell. In the adult " shell the ribs become widely separated, the largest chamber " measuring at the back 3½ inches, and they possess very acute " ridges, with two depressed bosses on either side, the depression " between the ribs being regularly concave."

"The block containing the last five chambers of the shell is " slightly compressed on the back; and, though it is not complete, " the mouth measures 7½ inches in depth by 7 inches in breadth. " The siphuncular tube is small and situated immediately under " the back of the shell." (loc. cit. p. 257).

The elements of the measurements in the specimen here represented (Pl. 2) approximately are as follows:—

Maximum diameter, 28½ in.

Thickness of the last whorl, 10 to 12 in., or at least $\frac{35}{100}$ of the above diameter.

The thickness, in the larger whorls, seems to be, as observed by Mr. Moore, larger than the width, therefore, the excentricity ($= \frac{\text{width}}{\text{thickness}}$) which, for the smaller whorls is about constant and of $\frac{120}{100}$, would, thus be reversed in the larger ones, but it has been impossible to measure it owing to the imperfect state of the fossil. Compared with the width of the shell the space between the ribs at the back is about $\frac{20}{100}$, for the smaller whorls represented and for the external ones, but it increases considerably towards the aperture being about $\frac{4}{100}$ in the last coiled whorls and $\frac{5}{100}$ or more in the largest part that it has been possible to measure.

Mr. Moore's specimen is from the district of the Upper. Maranoa.

In the Transactions of the Royal Society of N. S. Wales for the year 1882, Rev. J. E. T. Woods, F.G.S, mentions *Crioceras australe* from the Palmer River Goldfields, and supplies two photographs (Plate X., figs. 5 and 6).

The specimen described in the present Paper is from Yamba near Rockhampton, and was presented by R. N. Bell, Esq., in 1875.

EXPLANATION OF PLATE.

Plate 1.—Septa of *Crioceras australe* (?) drawn to the scale of about ¾ nat. size. The development of the half series of lobes represented, from the median external to the median internal line is about 13½ inches. The length of the septa from the lower end of the larger saddle up to the tip of the superior lateral lobe is about six inches. In order to show how the ramifications of two successive septa interfere with each other, the following ones have been partly drawn in dotted lines and corresponding letters put on similar parts of both walls.

Plate 2.—To the scale of about ⅙. The dotted circular line below the inner whorl represented, shows the space between the whorls which as already said, although close together are not in contact. The section on the left of the figure shows also that space.

THE INSECTS OF THE FLY RIVER, NEW GUINEA, "COLEOPTERA."

By William Macleay, F.L.S., &c.

All the Coleoptera collected during the Australian Geographical Society's Expedition to the Fly River, New Guinea, during the winter months of last year, have been placed in my hands for identification.

The collection is, for New Guinea, a large one, and evidences great zeal and industry on the part of Mr. Froggatt the collector. It numbers in all 295 species and 914 specimens.

In any part of Australia, such a collection would be looked upon as small for several months' work, but in New Guinea it is otherwise; my own experience, and that of all others who have collected in New Guinea, testify to the wonderfully limited Coleopterous Fauna of the Island.

Taken as a whole, the present collection bears out fully the observations, as to the absence of certain groups and the comparative numbers of others, made by me in 1875 (Proc. Linn. Soc., N. S. Wales, Vol. 1, p. 36), and by Mr. Achille Raffray in 1878. (Bull. Ent. Soc. Fr., p. 225.)

Thus of 15 species of the *Carabidæ* not more than two are true ground beetles. The *Staphylinidæ* are probably the only ground beetles which are comparatively numerous. On the other hand the lignivorous beetles are numerous in certain tribes, but not so in others, for instance the *Buprestidæ* though of large size and brilliancy, are few in number, the same may be said of the

Cetoniidæ, and the *Scarabæidæ* generally are very poorly represented. The *Lycidæ* are rather numerous. The *Tenebrionidæ* are few. The only really largely represented groups are the *Curculionidæ*, 50 species; the *Brenthidæ*, 9 species; the *Anthribidæ*, 6 species; the *Cerambycidæ*, 48 species, and the *Chrysomelidæ*, 64 species. The first of these have been made the subject of a monograph lately by Mr. F. A. Pascoe, and probably all in the present collection have been noticed or described by him. I have not however in my present paper got further in my investigations than the *Heteromera*. The *Tetramera* must form the subject of a future paper.

Family. CICINDELIDÆ.

1. Cicindela funerata. Boisd.

Voy. Astrol., II., 1835, p. 4, t. 6, f. 1.

2. Therates basalis. Dej.

Spec., II., p. 437; Jc., I., t. 6, f. 6.—Guér. Voy. Coquille, Ins., t. 1, f. 6.—d'Uurville, Dej. Cat., 3 ed., p. 7.

3. Tricondyla aptera. Oliv.

Ent., II., 33, p. 7, t. 1, f. 1. Dej. Spec., II., p. 483; Jc., t. 2, f. 6. Guér., Jc., t. 3, f. 3.

T. connata Lamark. An. s. vertebr., ed. 2, IV., p. 677.

Family. CARABIDÆ.

Sub-Family. HELLUONIDES.

4. Planetes unicolor. n. sp.

Head piceous, nitid, deeply and broadly impressed between the eyes on each side of a smooth median space. Antennæ and palpi piceous, nitid, the first joint of the antennæ thicker and larger than the third. Thorax rather dull brownish black, a little broader than long, emarginate in front, and as wide as the head and eyes, broadly rounded on the sides, and then narrowed to the base which is truncate and about the same width as the apex; the posterior angles are rather obtusely rectangular, the disk is flat, densely and very minutely punctured, clothed with a very short silky pubescence, and deeply impressed on the median line, with a recurved lateral margin and a deep impression on the basal half on each side near the posterior angle. Elytra brownish black, opaque, flat, parallel-sided, densely and minutely punctured, clothed with a very minute silky pubescence and marked with 8 or 9 almost invisible striæ. The legs are piceous, the tarsi clothed with long hairs. Length 5 lines,

I place this insect in W. S. Macleay's genus *Planetes* because it comes nearer to it than any thing else, and I wish to avoid multiplying genera. The very minute puncturation and generally obsolete sculpture of the elytra however, indicate a marked difference from others of the genus, but in respect to the points usually accepted as good generic characters, I cannot observe any difference.

Sub-Family. BRACHINIDES.

5. PHEROPSOPHUS PAPUENSIS. Macl.

Proc. Linn. Soc., N. S. Wales, Vol. I., p 166.

I described this insect from one specimen taken in the Delta of the Fly River during my expedition to New Guinea in 1875. The specimen then described was a female, I find a number of males in the present collection and they differ from the females in being much smaller and without the red spot on the elytra.

Sub-Family. .PERICALLIDES.

6. MISCELUS MORIONIFORMIS. Macl.

Proc. Linn. Soc., N. S. Wales, Vol. I., p. 168.

This species was described from a single specimen taken at Hall Sound, New Guinea, during the Chevert Expedition in 1875.

STRICKLANDIA. Nov. gen.

Labium as in Coptodera.

Palpi moderate, the terminal joint of the maxillary cylindrical, rather obtuse, longer than the penultimate. Labrum longer than broad, truncate and sexsetose.

Mandibles strong, without teeth, broad at the base, and acute and curved at the apex. Mentum deeply and squarely emarginate without any median tooth.

Antennæ longer than the head and thorax united, pubescent from the third joint, which is more than twice the length of the second. Legs moderately long, the thighs inflated, the ungues of the tarsi minutely pectinated on the basal half, the fourth joint of the tarsi entire, with rather long setæ on the inner apex.

Body depressed, ovate; thorax broadly margined. Elytra spinose at the apex.

I give this genus the name of the distinguished President of the Sydney Branch of the Geographical Society of Australasia, Sir Edward Strickland, K.C.B., &c., to whose exertions, in a great measure, the Expedition owes its excellent organisation and success.

7. STRICKLANDIA PERICALLOIDES. n. sp.

Black, very nitid; head very slightly impressed on each side between the eyes, and narrowed considerably behind the eyes. These are large and prominent, The antennæ and palpi are dark piceous. The thorax is a little broader than the length, about as wide as the head and eyes at the apex, which is semi-circularly emarginated, much rounded and widened from the anterior angles to about the middle, and then rapidly narrowed to near the posterior angles which are widened out into an obtuse broad recurved margin. The lateral margin is broad and recurved throughout, and is, on the upper half, armed with six or more long setæ springing from prominent punctures, there is a strong seta of the same kind on each posterior angle; the disk is marked with minute transverse scratches, and the median line is deeply marked. The elytra are much broader than the thorax; are in length about one-half more than the width, and are slightly narrowed towards the apex; there are eight striæ on each, with a row of very minute punctures in each stria, the interstices are ridged, the scutellar stria is short; there is a long acute spine at the sutural apex, and another shorter at the outer extremity of the apical emargination. The legs are piceous. Every portion of the upper surface is clothed with a short erect pile.

Length, 5 lines.

In many respects this insect seems to resemble the Madagascar genus *Nycteis*, though the general aspect is more that of a *Pericallus*, from which however in other respects it differs more widely. From *Thyreopterus*, *Catascopus* and the other genera formed in that group by the late Baron de Chaudoir, it differs both in having pectinate ungues to the tarsi, and in having no tooth in the emargination of the mentum, while from, from the Coptoderides of Chaudoir, to which group I believe it is really most nearly allied, it differs in the unarmed mentum from all the genera excepting *Nycteis*.

Sub-Family. MORIONIDES.

8. Morio stolidus. Chaud.

Bull. Mosc., 55, p. 336.

Sub-Family. CHLÆNIIDES.

9. Chlænius nigripes. n. sp.

Like *C. punctatus* Chaud. Of a brownish black colour, with the antennæ, palpi, and tarsi, piceous. Head minutely rugose; thorax depressed, almost square, slightly rounded on the sides, rather distantly punctured on the disk and with the median line and basal depressions distinctly but not profoundly impressed.

Elytra rather wider than the thorax, with nine striæ and a short scutellar one on each elytron, the interstices broad, depressed, and densely and minutely punctate; an orange patch near the apex of each elytron on the 3rd to the 8th interstice. the outer half of the patch extending nearer to the apex.

The under surface, thighs, and tibiæ the same colour as the upper surface but more nitid.

Length, 6½ lines.

Sub-Family. TRIGONOTOMIDES.

10. LESTICUS POLITUS. Chaud.

Ann. Soc. Ent. Belg., Tome XI., p. 156.

There are eight other species of Carabidæ in the collection, all with one exception represented only by single specimens. I find it consequently impossible without sacrificing the specimen, which I have no authority to do, to make out with any exactness the genus of any one of them. I simply therefore number them.

11. Resembles in form *Plochionus.*
12. Probably a *Colpodes.*
13. Near *Thyreopterus.*
14. Near *Thyreopterus.*
15 and 16. Near *Coptodera.*
17. Fam. *Harpalidæ.*
18. *Cyrtopterus* ?

Family. DYTISCIDÆ.

19. HYDATICUS FLAVOCINCTUS. Guér.

Voy. Coquille, II., p. 61, t. 1, fig. 18. Aubé Spec., p. 169.

20. COPELATUS POLITUS ? Sharp.

Sharp on Dytiscidæ, p. 568.

I have some doubts as to this species.

Family. GYRINIDÆ.

21. ENHYDRUS ALBERTISI. Régimb.

Ann. Mus. Civic. Genoa. Vol. XVIII., p. 70.

22. ENHYDRUS FROGGATTI. n. sp.

This species differs from *E. Albertisi* in being much smaller, in being less nitid but more of a bronzy hue, in having the scutellum much smaller, and in having the elytra much more distinctly marked with opaque striæ.

Length, 7 lines.

Family. STAPHYLINIDÆ.

Sub-Family. PIESTIDES.

23. Leptochirus Haackei. n. sp.

Like *L. monilicornis* Fauv., but the antennæ thicker and more moniliform and the inner frontal horns more distant.

Black, nitid; the antennæ hairy, the third, fourth and fifth joints very hairy. Head quite smooth, the excavation in front, the median canal and the horns in front very marked. Thorax rectangular, transverse, smooth, slightly rounded on the sides and with a deep median line. Elytra longer than the thorax, with a well marked stria near the suture, and a longitudinal groove near each side. The abdominal segments are sparingly clothed with long reddish hair; the extreme apex of the penultimate segment is piceous red. The legs are slender excepting the fore tibiæ which are broad and serrated externally.

Length 6½ lines.

Sub-Family. PAEDERIDES

24. Paederus Gestroi. Fauv.

Ann. Mus. Civic. Genoa, Vol. XII., p. 237.

Sub-Family. STAPHYLINIDES.

25. Emus Albertisii. Fauv.

Ann. Mus. Civic. Genoa, Vol. XV., p. 95.

26. Leucitus paradiseus, Fauv.

Ann. Mus. Civic. Genoa, Vol. XV., p. 96.

27. Quedius cyaneorufus. Fauv.

Ann. Mus. Civ. Genoa, Vol. XII., p. 274.

Family. HISTERIDAE.

28. Hololepta Batchiana. Mars.

Mon., 1860, p. 588, Pl. 1, fig. 2.

29. HOLOLEPTA SIDNENSIS. Mars.

Mon., 1860, p. 587, Pl. 1, fig. 1.

30. PLATYSOMA.

31. PLATYSOMA.

32. PLATYSOMA.

33. PLATYSOMA.

M. Marseul has described many of this genus from New Guinea, and probably the above four species, but as I have not all his works to refer to, I pass them over for the present.

Family. NITIDULIDÆ.

34. ITHYPHENES CUCUJIFORMIS. Reitt.

Ann. Mus. Civic., Genoa, Vol. XV., p. 454.

35. BRACHYPEPLUS ?

Genus doubtful.

Family. COLYDIIDÆ.

36. DASTARCUS CONFINIS. Pasc.

Journ. of Ent., I., p. 108, pl. VI., fig. 6.

Family. DERMESTIDÆ.

37. DERMESTES CADAVERINUS. Fab.

Fabr. Ent. Syst., p. 55. Oliv., Ent. II., 9, p. 7, t. 2, f. 9, *a. b.* A European species, now found in all parts of the world.

Family. LUCANIDÆ.

Sub-Family. LUCANIDES.

38. GNAPHALORYX APER. Gest.

Ann. Mus. Civic. Genoa., Vol. XVI., p. 324.

39 ÆGUS PLATYODON. Parry.

Proc. Ent. Soc., 1862, p. 112. Trans. Ent. Soc., Lond., II., 1864, p. 56, t. 10, p. 1.

40. ÆGUS GLABER. Parry.

Trans. Ent. Soc., Lond., II., 1864, p. 59.

Sub-Family. PASSALIDES.

41. AULACOCYCLUS PERLATUS. Kaup.

Berl. Ent. Zeit. Mon. Pass., 1871, p. 15.

42. VELLEJUS COMPERGUS. Boisd.

Voy. Astrol., p. 244. Burm., Handb., V., p. 530; Kaup., Berl. Ent. Zeit. Mon. Pass., 1871, p. 36.

43. PELOPS GESTROI. Kirsch.

Ann. Mus. Civic., Genoa, Vol. XIV., p. 18.

44. LABIENUS PTOX. Kaup.

Prod., 1, p. 25; Berl. Ent. Zeit. Mon. Pass., 1871, p. 39.

45. LEPTAULAX DENTATUS. Weber.

Fab. Syst. El., II., p. 256. Perch., Mon., p. 66, t. 5, f. 1. Kaup., Berl. Ent. Zeit. Mon. Pass., 1871, p. 33.

Syn. *L. quadridentatus*, Sturm. Cat., 1826, p. 182.

L. timoriensis, Perch. Supb., 1, p. 19, t. 78, f. 1. Burm., Lamell., V. p. 473.

A small specimen, about 15 mm. in length.

46. LACHES COMPTONII? Kaup.

Col. Heft., III., 1868, p. 28. Berl. Ent. Zeit. Mon. Pass, 1871, p. 49.

I am not by any means sure that my identification of this species is correct.

Family. SCARABÆIDÆ.

Sub-Family. COPRIDES.

47. ONTHOPHAGUS PLANICEPS. n. sp.

Black; antennæ, palpi and legs piceous. Head slightly nitid, minutely punctate, almost flat, the sides before the eyes roundly expanded and very slightly recurved, the clypeus in the male terminating in a narrow vertical plate; in the female in a narrow deep emargination also somewhat vertical. Thorax nitid, finely punctate, broader than the head, rather narrower than the elytra, broader than long, emarginate in front, rounded on the sides and behind, convex, without tuberosity and median line. Elytra opaque, with seven very fine punctured striæ on each, the sutural one most distinct. Interstices broad and flat. Fore tibiæ strongly quadridentate, somewhat resembling *O. Parryi*, Harold.

Length, 3 lines.

48. ONTHOPHAGUS OLEIPENNIS. n. sp.

Coppery black on head and thorax and under surface, sericeous reddish brown on the elytra. Clypeus large, flat, with a narrow recurved margin, transversely striated with a small emargination in front and a transverse semi-circular carina marking the suture with the head, at the back of the head two short triangular horns, joined by a slightly elevated emarginate plate. The thorax is convex, broad, and densely punctate, a small depression with a small tubercle on each side of it on the anterior part of the middle. The elytra are very faintly striated, the interstices flat, a short carina near the base of the third and two similar ones near the shoulder. The under surface and pygidium clothed with cinereous hairs.

Length, 4 lines.

49. ONTHOPHAGUS RETICOLLIS. n. sp.

Black, subnitid, the elytra subsericeous. The clypeus is like that of *O. oleipennis*, but more angular; the head is more rugosely transversely striolate; the horns behind are longer and the ridge between is not emarginate. The thorax is densely covered with minute tortuous elevations giving a reticulate appearance, there are two incisions on the front to receive the horns of the head. The striæ of the elytra are small but quite distinct. The under surface is sparingly clothed with hairs.

Length, 3 lines.

50. Liparochrus multistriatus. Har.

Col. Heft., XII., p. 48, 1874.

51. Liparochrus alternans. n. sp.

Piceous, black, subnitid. Head smooth, a small roundish depression on each side between the eyes. Thorax much broader than long, moderately convex, smooth, deeply emarginate in front, much rounded on the sides, and a little bisinuate at the base; the anterior angles are prominent, the posterior rounded, and the sides and base are narrowly margined. The elytra are broad, convex, and gradually widen to near the apex; the sculpture consists of series of coarse costæ alternating with smaller ones, the intervals occupied by double lines of finely punctate striæ. The legs are hairy, the fore tibiæ are bidentate externally, and strongly serrated along their entire length.

Length, 5½ lines.

Sub-Family. MELOLONTHIDES.

52. Lepidiota quinquelineata. Macl.

Proc. Ent. Soc., N. S. Wales. Vol. IX., p. 701.

43. Lepidiota squalida. n. sp.

Blackish brown, entirely and uniformly clothed with short ashen scales. The parts of the mouth and the front margin of the prothorax beneath are clothed with long reddish hair, and the mesosternum with recumbent pubescence, the sides of the meso and metasternum and the sides of the abdominal segments are clothed with white scales, the legs are setose. The thorax is quite as broad as the length. The elytra are four times the length of the thorax and nearly parallel-sided, there are three or four spots partially denuded of scales on each elytron, giving a faint spotted appearance, the fore tibiæ are strongly and bluntly tridentate. The scutellum is broader than the length.

Length, 15 lines.

54. MELOLONTHA ?

This seems to be a true *Melolontha*, but as I cannot be positive as to the genus, I pass it over.

Sub-Family. RUTELIDES.

55. ANOMALA. sp. doubtful.

Sub-Family. DYNASTIDES.

56. SCAPANES POLITUS. Macl.

Proc. Linn. Soc., N. S. Wales, Vol. IX., p. 703.

One female specimen.

Sub-Family. CETONIIDES.

57. LOMAPTERA INERMIS. Wallace.

Trans. Ent. Soc., Lond., 3 Ser., Vol. IV., p. 545, t. 12, f. 2.

58. EURYOMIA LATERALIS. Wallace.

Trans. Ent. Soc., Lond., 3, IV., p. 569, t. 13, f. 9.

59. EURYOMIA RUFITINCTA. n. sp.

A little larger than *E. lateralis*, and of an opaque velvety black. Thorax punctured with a small yellow patch in front near the anterior angles and two small patches of the same colour near the lateral margin. The elytra are marked with large variolose punctures, most densely behind, and have three or four curved costæ on each side of the suture, there is a reddish patch from the humeral angle, bordered by yellow and terminating in a yellow patch behind the middle, the pygidium is yellow.

60. GLYCIPHANA VELUTINA. n. sp.

Of a velvety greenish black, the sides of the thorax very narrowly margined with yellow and with very minute spots of the same colour on each elytron; two, transversely placed, about the middle of the side; one near the posterior angle, and one (transverse) at the middle of the apex. The under surface is black and nitid, the prosternum and anterior femora pilose, the sides of the pro-meso and metasternum covered with yellowish scales and the pygidium margined with yellow.

Length 3 lines.

Family. BUPRESTIDÆ.

61. CYPHOGASTRA CALEPYGA. Thoms.

Arch. Ent., I., p. 430, t. 16, f. 6.

62. CHRYSOBOTHRIS AUROPUNCTATA. Deyr.

Ann. Ent. Belg., VIII., 1864, p. 110.

63. MELOBASIS SUTURALIS. n. sp.

Head and thorax golden green, densely and sharply punctate; the scutellum is broader than long, almost rectangular, without puncturation and of a golden effulgence. The elytra are cyaneous, with a golden green vitta on the suture on the basal half and a large greenish patch from the humerus to behind the middle. The sculpture consists of many irregular rows of minute spots, and the sides towards the apex are armed with 15 or 16 minute serrations; the under surface is of a brilliant golden-green and punctate.

Length, 4 lines.

64. CISSEIS DIMIDIATUS. n. sp.

Head and thorax coppery, the first covered by the thorax to the middle of the eyes and clothed with ashen pile, the thorax reddish coppery in the middle, convex and with wide lateral margins particularly at the posterior angles clothed with ashen pile. The scutellum is rounded behind. The elytra are blue and densely punctate, with a basal impression on each side and one behind the humerus. The apical half is clothed with minute ashen scales, and the sides are very minutely serrated, the apex is bidentate.

Length, 3½ lines.

Family. EUCNEMIDÆ.

65. GALBA MARMORATA. Guér.-Men.

Voy. Coquille Ent., p. 68, Pl. 2, fig. 3.—Mont.—Boisd.—Bonvouloir, Eucn., p. 811, Pl. 39, fig. 3.

66. GALBA AURICOLOR. Bonv.

Mon. des Eucnem., p. 821, Pl. 39, fig. 8.

67. GALBA WALLACEI. Perroud.

Ann. Soc. Linn. Lyon., 1864, p. 98. Bonv. Mon. des Eucnem., p. 822, Pl. 39, f, 9, and Pl. 40, f. 1.

68. CAFOLUS MŒSTUS. Bonv.

Mon. des Eucnem., p. 780, Pl. 37, fig. 9.

Family. ELATERIDÆ.

69. ALAUS OBLIQUUS. Candeze.

Mem. Roy. Soc. Liége., 1874, 143.

70. ALAUS INFUMATUS. Candeze.

Mem. Roy. Soc. Liége, 1874, p. 144.

71-72-73. GENERA DOUBTFUL.

Family. LYCIDÆ.

74. CALOCHROMUS FORMOSUS. n. sp.

Head black, nitid; thorax red, nearly square, deeply impressed near the anterior and posterior angles. Scutellum and base of the elytra red, the remainder cyaneous, with about nine fine costæ on each elytron, under surface and legs bluish black. There is only one specimen of this insect, and that very imperfect, but it seems to be different from any of those hitherto described.

Length, 6 lines.

75. METRIORHYNCHUS EPHIPPIGER. Guér.

Voy. Coquille, p. 73. Boisd., Voy. Astrol., 11, p. 118.

76. METRIORHYNCHUS IMMERSUS. Waterh.

Typ. Lyc. Brit. Mus., p. 53, Pl. XIII., fig. 1.

77. METRIORHYNCHUS DOLESCHALLI. Redtend.

Voy. Novara., II., p. 101, Pl. 3, fig. 12.

78. METRIORHYNCHUS THORACICUS. Fab.

Syst. Eleuth., Vol. II., 37, p. 117.

79. METRIORHYNCHUS PARALLELUS. Guér.

Voy. Coquille, p. 72. Boisd., Voy. Astrol., II., 114.

80. METRIORHYNCHUS TENUIS. n. sp.

Somewhat resembling *M. angustulus*, Waterh. Elongate, narrow, parallel-sided, and of a blackish brown colour excepting a reddish patch about the scutellum. The thorax beneath and the base of the thighs yellow. There are six costæ on each elytron with a double row of punctures between each.

Length, 4½lines.

81. METRIORHYNCHUS SERRICORNIS.

Black with a bluish tinge, and opaque. Antennæ compressed and serrate. Head completely covered by the thorax. Thorax distinctly 7-areolate, widened at the base and acutely angled, a very narrow basal margin reddish, the base biemarginate, the middle forming an emarginate prominence. Scutellum blackish. Elytra red with the apical fourth bluish-black, there are 10 distinct rows of square punctures on each elytron, every second interstice forming a distinct costa. The thorax is yellow, beneath the abdomen black, the legs are brown with the inner edge of the thighs yellowish.

Length 4½ lines.

87. METRIORHYNCHUS INFUSCATUS.

Head black, antennæ compressed, serrate; thorax dingy yellow, opaque, areolae distinct. Elytra blackish brown, becoming yellowish brown near the base, six costæ on each, with a double line of punctures between them. Thorax beneath and basal half of the thighs yellow. Abdomen bluish black.

Length 3½ lines.

83. CALOPTERON FLAVICANS. Blanch.

Voy. Pole. Sud., IV., p. 76, Pl. 5, fig. 13.

84. CALOPTERON AMPLIPENNE. n. sp.

Entirely of an opaque black excepting the basal third of the elytra which is red. The antennæ are very compressed, the joints broad and strongly toothed on the inner side, the third, fourth, fifth and sixth joints about equal. The thorax has a lanceolate middle areola and is deeply serrated on each side. The elytra are five times the length of the thorax and much ampliated behind. There are five distinct costæ on each elytron along the whole length, and a few short intermediate ones near the base, separating the double rows of punctures.

Length 5½ lines.

85. XYLOBANUS REGULARIS. Waterh.

Typ. Brit. Mus. Lyc., p. 41, pl. X., fig. 8.

86. XYLOBANUS OBSCURUS. n. sp.

Elongate, narrow, black, opaque. Antennæ compressed, the inner apex of each joint projecting into a long point; thorax biemarginate at the base, the posterior angles acute. Elytra long, parallel-sided, quadricostate, the humeral angles and a narrow sutural and lateral line reddish. Length, 5 lines.

87. CLADOPHORUS INGENUUS. Waterh.

Typ. Brit. Mus. Lycidæ, p. 64, pl. XVI., fig. 2.

88. CLADOPHORUS LONGICORNIS, n. sp.

This species differs from *C. ingenuus*, in being much larger, in having the antennæ longer and more largely branched, in having the scutellum and the whole under surface black, and in having the elytra ampliated towards the apex. Length, 7 lines.

89. CLADOPHORUS APICALIS. n. sp.

This is also very close to *C. ingenuus*, and differs from the last—*C. longicornis* in having the scutellum the same colour as the elytra, in having the extreme tips of the elytra brown, and in having the underside of the thorax and basal tips of the thighs yellow. Length, 7 lines.

90. CLADOPHORUS NIGRESCENS. n. sp.

Black, antennæ flat and toothed in the female, much branched in the male. Head and thorax nitid, scutellum black. Elytra with the base and costæ red; the apex and the spaces between the costæ dark. The bases of the thighs are yellowish. Length, 4 lines.

91. CLADOPHORUS SEMIRUFUS. n. sp.

Narrow, elongate, black or bluish-black all over with the exception of the basal two-thirds of the elytra, which are of a brick red; the intermediate costæ are near the base almost as large as the usual large costæ.

Length, 3½ lines.

92. TRICHALUS PALLIDIPENNIS. n. sp.

Brownish black, the thorax, scutellum, elytra and base of thighs dusky yellow. The antennæ are long and compressed, and little dentate, the discoidal areolet of the thorax is narrow, the others are not traceable.

93. TRICHALUS APICALIS. n. sp.

I am in some doubt as to the genus of this insect. The colour is bluish black, with the thorax, scutellum, basal two-thirds of the elytra, the under side of the thorax and the base of the thigh, reddish yellow. The antennæ are long and compressed. The thorax is nearly truncate behind with the angles acute, the discoidal areolet is broad and triangular, the others ill-defined, the scutellum is square and truncate.

Length, 5 lines.

Family. TELEPHORIDÆ.

94. Telephorus acutipennis. Guér.

Voy. Coquille, p. 75. Boisd., Voy. Astrol., II., p. 132.

95. Tylocerus antennatus. Guér.

Voy, Coquille, Ent., p. 74, Pl. 2, fig. 6.

This does not quite agree with Guérin's description, and is probably a distinct species.

96. Genus doubtful.

Family. MELYRIDÆ.

97. Carphurus cyaneipennis. n. sp.

Head and thorax luteous, hairy, the former rather longer than and completely bent under the thorax. Antennæ dentate beneath, the last 8 joints black. Thorax longer than broad, rectangular, depressed near the base. Elytra very dark blue, opaque, punctate, pilose, covering the first segment of the abdomen. Abdomen black, nitid, hairy, the terminal segment and part of the penultimate segment reddish. Wings brownish black. Length, 3 lines.

Family. CLERIDÆ.

98. Omadius. sp?

99. Omadius. sp?

A number of species of this genus have been described by Mr. H. S. Gorham in the 2nd volume of Cistula Entomologica, in 1875 and 1876, and as that work is not accessible I am unable to say whether the above two species have been described or not.

Family. BOSTRICHIDÆ.

100. Rhizopertha religiosa. Boisd.

Voy. Astrol., II., p. 140. Fairm., Rev. Zool., 1850, p. 50.

101. Rhizopertha Papuensis. n. sp.

Oblong, parallel-sided, piceous black, sub-opaque; antennæ and legs piceous red. Thorax roughly punctate and opaque, projecting over the head, emarginate in front, retuse in front, toothed on the anterior lateral margin, and truncate and rectangular at the base. The elytra are three times the length of the thorax, and of the same width, with 9 or 10 rows of large punctures on each with slightly raised interstices; they are only slightly retuse near the apex and without teeth or tubercle. A scanty whitish pubescence covers the whole body.

Length, 4 lines.

102. Genus doubtful.

A very minute insect and only one specimen.

Family. TENEBRIONIDÆ.

103. Nyctozoilus crenaticollis. n. sp.

I am not at all sure of the genus of this insect. It is of an opaque black colour all over and moderately convex. The head is flat and punctate. The thorax is transverse, emarginate in front and bisinuate at the base; the anterior angles rounded, the posterior rather acute,, the sides slightly rounded and coarsely crenulate; the elytra have each 9 distinct costæ with broad smooth intervals. The antennæ have the first joint a little larger than the others, the second a little smaller, they get gradually thicker to the apex.

Length, 9 lines.

104 Prophanes submetallicus. n. sp.

This and the following species are clearly of the same genus, but the genus is probably not strictly *Prophanes.* Black, nitid, antennæ short, the last five joints flattened, enlarged and hairy. Head nearly flat, without marking. Thorax nearly square, deeply emarginate in front and narrowly margined, broadly margined on the sides, and nearly truncate at the base with a broad slight median lobe, the anterior angles are prominently produced but rounded, the posterior square, there are two deep impressions on the disk near the base. The elytra are a little broader than the thorax, and three times the length, of a reddish coppery hue with green reflections, and with 8 rows of large rather distant punctures on each elytron.

Length, 8 lines.

105. PROPHANES CUPREIPENNIS. n. sp.

Like the last-named species, but the anterior angles of the thorax not nearly so produced; the thorax is also finely punctate, without the impression near the base, and broader at the base than at the apex. The elytra are proportionately narrower and larger; the punctures are rather fine and the colour is more of a purplish than reddish copper.

Length, 7 lines.

106. Near HEMICYCLUS.

One specimen, genus doubtful.

107. Near TITÆNA. n. sp.

One specimen only.

108. AMARYGMUS CUPREUS. Guér.

Voy. Coquille, II., p. 102, pl. 5, fig. 2. Boisd., Voy. Astrol., II., p. 272.

109. AMARYGMUS INORNATUS. n. sp.

Black, subnitid. Head most minutely punctured, a transverse line in front of the eyes, epistome margined in front and separated from the labrum. Thorax minutely obsoletely punctate, a slight transverse depression close to the base at the median basal lobe. The elytra have on each side nine distinct striæ, the 1st (scutellar) short and finely punctate, the others rather distinctly punctured, the punctures becoming large on the lateral striæ. The legs are piceous red.

Length, 5 lines.

110. AMARYGMUS OCULEUS. n. sp.

Greenish black, nitid, antennæ and legs reddish. Head punctate, suture of epistome rounded. Epistome itself convex, not margined, eyes large, almost meeting at the back of the head, antennæ inserted on distinct tubercles, thorax finely punctate, with a slight impression at the base on each side of the median basal lobe. Elytra with 8 very distinct large punctured striæ on each side and a very short scutellar one.

Length, 5 lines.

111. AMARYGMUS PUNCTICEPS. n. sp.

Greenish or bluish black, subnitid, the antennæ and legs yellowish red. Head strongly punctate, the clypeus very large, biemarginate behind, the middle sinus fitting into a longitudinal groove on the head; the apex emarginate, the labrum nearly square, the palpi filiform, the eyes large and entire. Thorax punctured, the punctures large and largest and thickest near the sides. Elytra striated and punctate in the striæ, but not so profoundly as in the last species. A strong tooth and notch near the outer apex in the four posterior tibiæ.

Length 3½ lines.

112. AMARYGMUS CONVEXEUSCULUS.

Black, nitid. Head very minutely punctate, a little emarginate at the suture of the clypens, that and the labrum transverse. A slight purplish gloss on the thorax. Elytra very convex; deeply striated with smallish punctures in the striæ, and with the interstices smooth and rather convex.

Length, 3 lines.

113. ALLECULA PAPUENSIS. n. sp.

Black, subnitid, palpi and thighs piceous. Eyes large, a small oval depression on the forehead in the narrow space between the eyes. Thorax almost square, the anterior angles round, the posterior square, a slight emargination in the middle of each side. Elytra elongate, each with 8 striæ consisting of rectangular oblong punctures or depressions.

Length 7 lines.

Family. LAGRIIDÆ.

114. Lagria pulchella. Guér.

Voy. Coquille, II., p. 104, t. 5, f. 5. Boisd., Voy. Astrol., II., p. 288. Blanch., Voy. Pole. Sud., IV., p. 185, t. 12, f. 11.

115 Lagria azureipennis. n. sp.

Head and thorax metallic green, rather opaque, densely punctate, and about the same length and width. Antennæ, palpi and part of the mouth reddish brown. The elytra are of a purplish sapphirine blue, densely and sharply punctate. The pusbescence is thin and short in this species, and unusually so for the genus.

Length, 5 lines.

116. Lagria palliata. n. sp.

Black, opaque, convex. Thorax wider at the base than in front. Elytra much ampliated from the shoulders, very convex, finely and irregularly punctate, and with a band of silvery pubescence across behind the shoulders. The tibiæ are long, slender and rather curved.

Length, 7 lines.

Family. ŒDEMERIDÆ.

117. Nacerdes rufipes. n. sp.

Entirely blackish-brown, excepting the thighs and coxæ, labrum and the first joint of antennæ which are pale red, and the rest of the antennæ, palpi, tibiæ and tarsi which are pale brown. A very short ashen pubescence covers the whole insect. The first joint of the antennæ is very long, the second very short, the others long, the 2nd, 3rd and 4th joints of the maxillary palpi are each as long as the 1st joint of the antennæ. Head finely and densely punctate, eyes very large. Thorax much longer than the width, constricted behind the middle and widened a little at the posterior angles. Elytra broader than the thorax, elongate, parallel-sided, very densely and finely punctate, pointed at the apex, and with three fine costæ on each side of the suture.

Length, 5 lines.

NOTES FROM THE AUSTRALIAN MUSEUM.

ON A NEW GENUS AND SPECIES OF FRESH WATER TORTOISE FROM THE FLY RIVER, NEW GUINEA.

By E. P. Ramsay, F.R.S.E.

(Plates III.-VI.)

Carettochelys, nov. gen.

Head large subquadrangular, narrowed anteriorly, plates six (?), anchylosed, rugose; nostrils anterior, grooved; jaws naked, with sharp cutting edges, the lower curved, without notches; palate grooved. Head and limbs non-retractile. Arms elongate, narrow, compressed, ridged on their rounded anterior portion with narrow plates, nails free, on first two digits only, rest without nails and strongly webbed, the tips flattened, the third the longest. Hindlegs short, first two toes with strong sharp nails, nails only free, the rest strongly webbed to the tips. Tail with narrow rings above. Carapace shield-shaped, rounded and high in front, pointed and keeled behind. Plastron of 9 shields (1) rounded anteriorly and posteriorly, the 2nd and 3rd pairs anchylosed to the marginals. (See plate III.)

Carettocchelys insculptus.

Adult female.—First vertebral plate oval, more than twice as long as wide, joins the nuchal plate in front and ends within the two adjacent costals, 3rd to 6th similar in form, the 4th the

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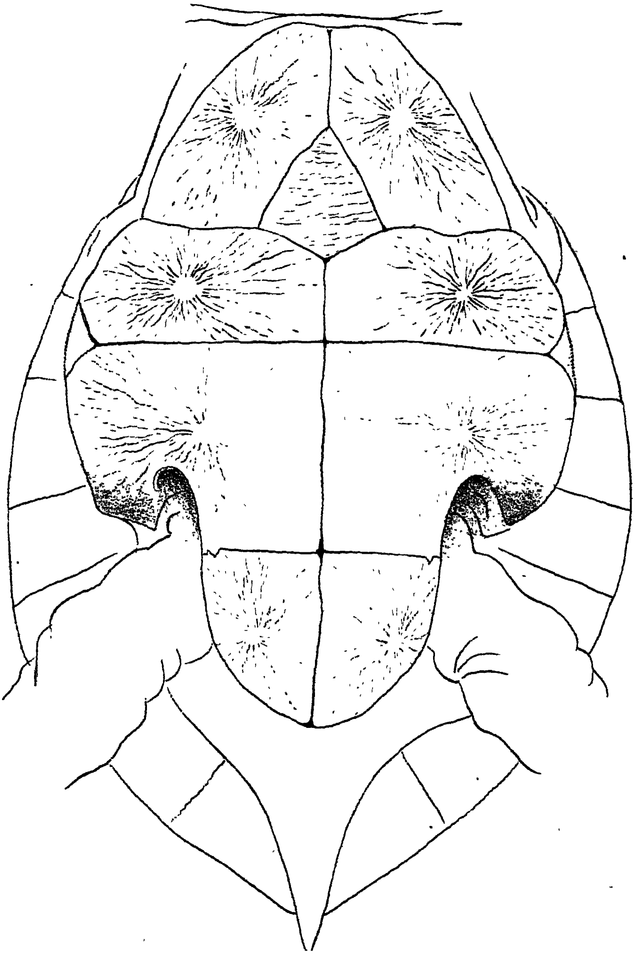
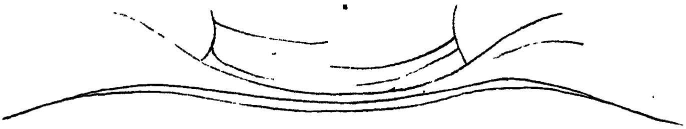
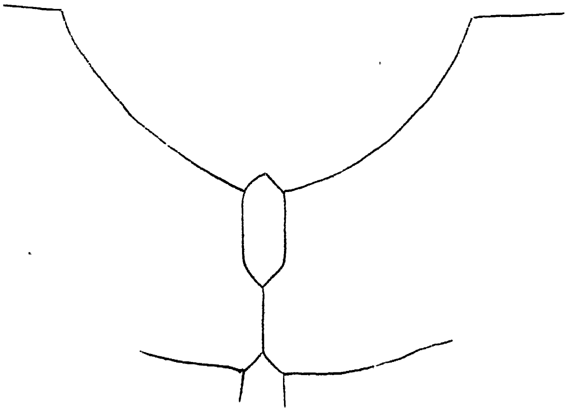
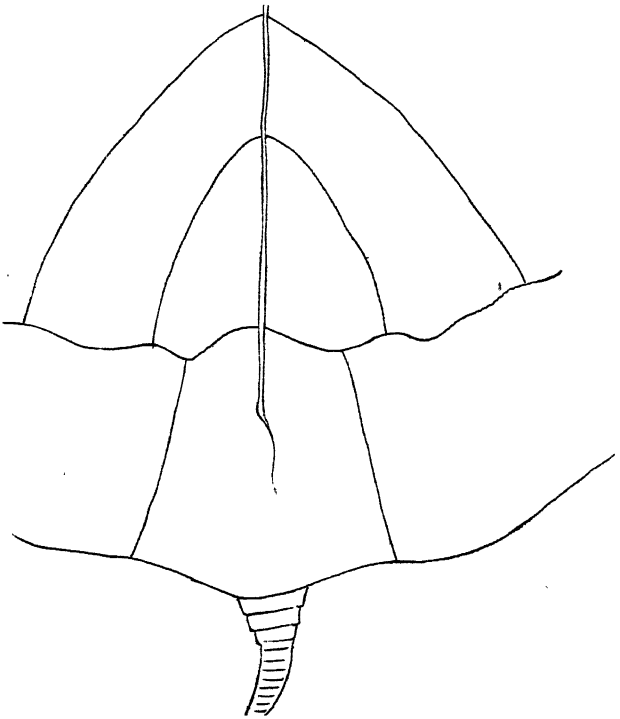
(1) There are two small portions cut away from between the 2nd and 3rd plates and the marginals, so that it is impossible to say if these are extra plates or parts of the marginals.



G.H. BARROW, del. et. lith.







G. H. BARROW, del et lith.

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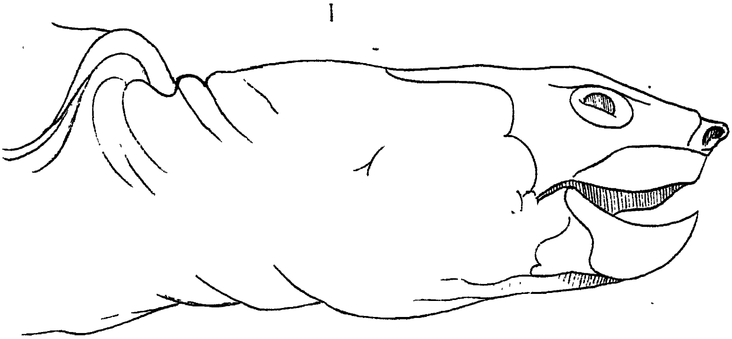

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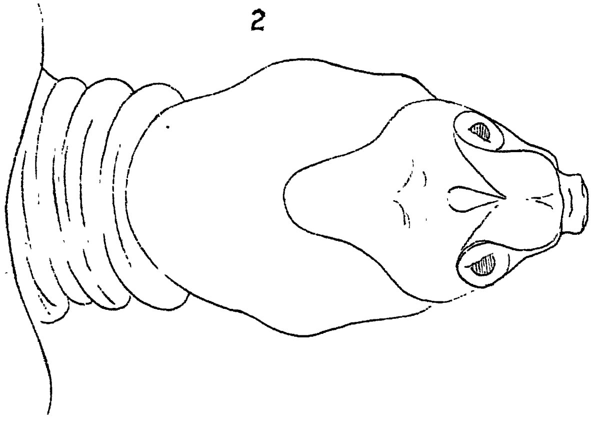

G. H. BARROW, del. et. lith.

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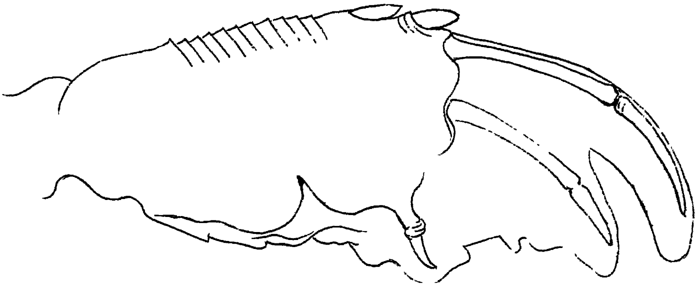

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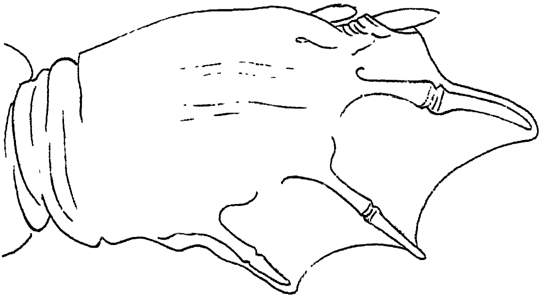

G.H BARROW, del et lith.

widest, $1\frac{1}{2}$ in its length; all are separated from one another. The first wedged in between the anterior dorsal plate and first pair of costals, narrow 4-sided, pointed in front, sides curved, almost oval behind, becoming obsolete or anchylosed between the 5th or 6th costal plate.

The nuchal plate apparently anchylosed with the marginal and costals on either side, the sutures scarcely traceable, the 1st pair of marginals short, five-sided, about half as long again as wide, somewhat oblong, their outer margin rounded, anterior upper margin enters the outer lateral margin of the anterior plate forming two sides of an angle, the other margin joining the costal plate and the adjoining second marginal plate are comparatively straight.

First pair of costal plates four-sided, straight behind the 1st vertebral plate except where they surround it; greatly widened out anteriorly and laterally, joining the first two marginals, and part of the third where they are nearly twice as wide as on their dorsal boundary, posterior margin more than three times the length of the dorsal.

Second pair of costals long, about two-thirds wider at the marginal than at the vertebral boundary, fourth marginal oblong, its suture opposite the hinder margin of the third costal.

The 4th and 5th costal plates similar to the 2nd pair, but each increasing in width at the junction with the marginals and decreasing above on the vertebral line; the 7th, 8th, and 9th, and the adjacent half of last marginal forming a sharp dorsal ridge and anchylosed together.

Carapace subcordiform highly elevated and rounded in front; laterally flattened behind, and strongly keeled, the sides shelving with the marginal shields expanding, densely rugose. The three last costal plates connected along the vertebral line forming an elevated sharp ridge, which extends to the centre of the pygomarginal, the adjacent marginal plates expanded over the hind legs. The anterior margin of fore legs covered with from 7 to 10 narrow band-like oblique unequal plates (see pl. VI., fig. 1.); nails of the 1st and 2nd toes long, whitish in colour: other toes flattened, enveloped in skin, webbed, the 3rd the longest, webs extending beyond the tips. Hind legs (pl. VI., fig 2) without any shields, nails of 1st and 2nd toes free, 3rd toe longest, 3rd, 4th, 5th within the web, flattened without nails. Tail with from 14 to 16 narrow curved plates on the upper surface, skin wrinkled.

The 2nd to 6th marginal plates narrow, the 7th much wider behind than in front, 8th almost square, the remainder gradually increasing in width to the 10th, which has its outer border one-fourth greater than its upper, which joins the last two costal plates.

All the marginals from the 6th are slightly curved upwards and outwards to their outer margin, the central is keeled on its anterior half where it forms the last part of the dorsal ridge, adjoining the pygal, but is rounded posteriorly, bevelled off at its hinder margin like the rest. All the marginals from the 6th are very compressed and thinned off, forming a cutting outer edge.

The plastron or ventral shield is flat, of 9 plates, between the 1st and 2nd pairs the interclavicle a 4-sided plate is wedged in, having the two anterior or apical sides nearly twice as long as the posterior and forming an acute angle between the first pair of clavicles; 2nd, 3rd, and 4th pairs of plates with a straight median suture (see pl. III); the 2nd and 3rd pairs anchylosed to the 4th and 7th marginals. The whole of the plates of the carapace and sternum are covered with small round raised rugations or wavy irregular raised lines between shallow sculptures, towards the lower borders on the sides, these take an elongated form sometimes parallel to the sutures.

Hind portion of the head, the neck, and the legs covered with a smooth skin; head with 5 to 7 plates, anterior and median pairs anchylosed. Nostrils anterior, widely grooved in front, coronal plates bent down behind the eyes, mandibles with a sharp cutting horny edge, the symphysis of the upper jaw rounded in front and notched at the sides. Palate grooved on either side (where not cut away), the occipital shields are large and broad and rugose like those on the back. Head large and wide, throat swollen, skin bare round the eye, no preorbital ridges.

Measurements:—Total length of carapace 18 inches; along the curve of the back 19 inches; breadth through widest part

13·6 inches; over the back 18 inches; plastron in length 14·5 inches; breadth 11·5 inches; head and neck about 7 inches, from nostril to eye 1·7, from nostril to posterior margin of occipital shield 3·4 inches; wrist and hand to tip of third finger, 6 inches; width 2·5 inches; hind fin from plastron 8 inches; width 3 inches; tail from plastron 4 inches; free portion of marginal plate over the tail 2·7 inches.

Marginals 10 + 10 + 1	21
Costals 8 + 8	16
Pygal 1	1
Nuchal 1	1
Vertebral or neural; *traceable from without*	6 only
Plastron or ventral shield 9 distinct plates.	
Episternal 1 + 1	2
Interclavicle 1	1
Hyposternals 1 + 1	2
Hyosternals 1 + 1	2
Xiphisternals 1 + 1	2

The two triangular plates at the side, shown in pl. III., are probably only the curved-in portions of the adjacent marginals, and have been cut away in the present specimen.

Remarks.—I had provisionally placed this species near the genus *Cyclanosteus*, as it appeared to me to be allied to that genus and to *Emyda*, but finding that it differed so considerably from both, I have been obliged to create a new genus *Carretochelys* for its reception. If the ossified portions of the genus *Emyda* (Gray), were anchylosed and the posterior flap absorbed, the plastron would be almost identical with the present species. There is nothing in Gray's Catalogue or Supplement that comes nearer to it than these genera, but it appears to me to be a link between the river tortoises and the sea turtles.

The eggs with this specimen prove it to be a female; they are white, hard-shelled, and almost quite round, 1·55 x 1·5 inches in diameter.

EXPLANATION OF PLATES.

PLATE III.

Plastron showing the two small plates, which may have been part of the marginals and not separate plates as shown in the figure, cut away; the points of ossification shown in each plate.

PLATE IV.

Fig. 1.—Anterior portion of carapace showing medial and 1st and 2nd vertebral plates.

Fig. 2.—Last pair of costals, pygal, and the partly ridged marginal plate and tail, from above.

PLATE V.

Fig. 1.—Profile of head.

Fig. 2.—Head from above showing the plates.

PLATE VI.

Fig. 1.—Fore leg slightly distorted in drying.

Fig 2.—Hind leg. ,, ,,

NOTES AND EXHIBITS.

Mr. Ramsay exhibited the Tortoise described in his Paper.

Mr. K. H. Bennett exhibited a very singular looking Fungus from Mossgiel. It was quite new to the members present, but was probably a species of *Scleroderma.*

Mr. Brazier exhibited two new species of *Helix,* one from Conond Station near Silverton, Mitchell District; the other from the top of slate ridges 30 miles N.E. of Silverton. He said he would describe them at a future Meeting of the Society.

Mr. Haviland exhibited on behalf of the Rev. Mr. Alkin, a very perfect specimen of a *Sphæria* parasitic on a Caterpillar. Both the Caterpillar and the Fungus seemed to be different from the commonly known species, the Caterpillar being longer and the Fungus much thicker and shorter. No information was given as to habitat.

Mr. J. Douglas-Ogilby exhibited the *Coris* described by Mr. Ramsay and himself.

Mr. A. Sidney Olliff exhibited specimens of *Tettix australis,* Walker, a small grasshopper which he had found in some numbers in shallow fresh water pools on the banks of the River Nepean, some 15 miles above Penrith (N.S.W.), in the month of September last. Mr. Olliff said that specimens were first observed clinging to the leaves of a water plant on the surface of the water, but afterwards many others were found both by Mr. Ogilby and himself on the stems of the plants 8 or 10 inches below the surface. When disturbed they swam to the bottom of their own accord. Mr. McLachlan, F.R.S., who kindly identified the species, writes that the *Tettix* of Europe usually frequent dry sandy places.

He also exhibited male and female specimens of a pelagic Hemipteron (*Halobates wüllerstoffi,* Frauenf.) which had been captured by Mr. Wagstaff, in a towing net off the West Coast of

Australia. The species is of very wide range and has been observed near Norfolk Island and New Guinea, but has not hitherto been recorded from waters west of the mainland of Australia.

Mr. Masters exhibited a large Hive of Bees entirely destroyed by *Achrea grisella*, a Tinea introduced from Europe. Also a seed vessel of *Trapa bicornis*, a Chinese species, imported into the country as an edible, and known as the Buffalo Nut.

Mr. C. S. Wilkinson exhibited some fossil Turtle eggs embedded in coral sand rock, from Lord Howe Island. In the same rock are found numerous bones of Turtles, associated with bones of the extinct Horned Lizard, *Megalania*, of which two skulls have been found.

Mr. Wilkinson also exhibited two specimens of *Trochus imperialis* from New Zealand.

Mr. Macleay exhibited the New Guinea Coleoptera enumerated in his Paper.

Mr. Fletcher exhibited a female specimen of *Antechinus flavipes*, one of the smaller Dasyuridæ, having nine mammary fœtuses on the teats in the shallow pouch. Mr. Krefft, (Trans. Philos. Soc. of N.S.W., 1862-65 p. 10) who has recorded the occurrence of a like number in this species, on one occasion met with ten young ones. The specimen exhibited was kindly sent by J. D. Cox, Esq., of Cullenbone near Mudgee. Mr. Fletcher also exhibited three blastodermic vesicles of Kangaroos (*Halmaturus dorsalis* and *Osphranter robustus*) the largest of which was about the size of a large pea, and shewed a pear-shaped embryonic area. All the vesicles were quite unattached to the uteri, the cavities of which exactly corresponded to the size and shape of the vesicles. Also a uterine fœtus of *Osphranter robustus* of nearly the full period, about an inch long, with the fœtal membranes attached.

WEDNESDAY, 31st MARCH, 1886.

William A. Haswell, Esq., M.A., B.Sc., in the Chair.

Mr James Scott, Mr. L. F. Heydon, and Dr. O. Katz were introduced as visitors.

DONATIONS.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CI., Nos. 22-26. From the Academy.

"Descriptive notes on Papuan Plants." By Baron Ferd. von Mueller, K.C.M.G., &c. No. VII. From the Author.

"Hints on the preservation of Specimens of Natural History." By John MacGillivray, F.R.G.S. "Australian Vertebrata (Recent and Fossil"), and "Notes on the Fauna of Tasmania." By Gerard Krefft., F.L.S., "Catalogue of the described Coleoptera of Australia." By George Masters. Parts I.-V. "Catalogue of the described Diurnal Lepidoptera of Australia." By George Masters. From George Masters, Esq.

"Vögel von Neu Guinea," beschrieben von O. Finsch und A. B. Meyer. No. 1. Paradiseidæ. From Dr. O. Finsch.

"Zoologischer Anzeiger." Nos. 213-215. From the Editor.

"Journal of the New York Microscopical Society." Vol. I., No. 8. From the Society.

"Victorian Naturalist." Vol. II., No. 11. From the Field Naturalists' Club of Victoria.

"Science." Vol. VIII., Nos. 155-157. From the Editor.

"Oology of Australian Birds." Supplement, Part II. By A. J. Campbell. From the Author.

"Photographs of a person suffering from *Variola discreta*, and an account of the Case." From the Board of Health, Sydney.

"Cook's Voyages." The First, Vols. I., II., and III. The Second, Vols. I., and II. The Third, Vols. I., II., and III. With Atlas of Plates. "Fauna Japonica, Reptilia." By C. J. Temminck and H. Schlegel. From the Hon. William Macleay, F.L.S.

"Catalogue of Lizards in the British Museum." 2nd edition. By G. A. Boulenger. Vol. II., 1885. From the Trustees.

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"Verhandlungen der Kaiserlich-königlichen Zoologisch-botanischen Gesellschaft in Wien." Band XXXIV., 1884. From the Society.

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"Studies from the Biological Laboratory of the Johns Hopkins University, Baltimore." Vol. III., Nos. 1-3. Eighth and Ninth Annual Reports, 1883 and 1884. "University Circulars." Vol.

IV., Nos. 33-40. "Proceedings of the Trustees of the John F. Sclater Fund for the education of Freedmen, 1884." From the Johns Hopkins University, Baltimore.

"Proceedings of the Boston Society of Natural History." Vol. XXII., Part IV., 1883. Vol. XXIII., Part 1, 1884. From the Society.

"Monatliche Mittheilungen des Naturwissenschaftlichen Vereins des Regierungsbezirkes Frankfurt." III. Jahrg., Nos. 9 & 10. From the Society.

"Bulletin de la Société Impériale des Naturalistes de Moscou." Tome LXI., No. 1, 1885. From the Society.

"Bulletin de la Société Royale de Géographie d'Anvers." Tome X., Fasc. 3, 1885. From the Society.

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PAPERS READ.

ON CERTAIN GECKOS IN THE QUEENSLAND MUSEUM.

BY C. W. DE VIS, M.A.

The head-quarters of *Nephrurus asper*, Günth., seems to be that part of Central Queensland, east of the Dividing Range, which lies on the northern slope of the east and west anticlinal. It has been received by the British Museum from the Peak Downs. The colonial collection has been supplied with examples from Bogantungun and Natal Downs. Whether its range extends to the great southern watershed is not as yet in evidence. It may be that its limit in this direction is defined by the presence of a second species of the genus represented by the example which is submitted for comparison under the name of

NEPHRURUS LEVIS,

distinguishable at a glance from *N. asper* by its comparatively smooth lepidosis and expanded tail.

Description:—Head very large, broader than the neck and body, subtriangular, convex. Snout as long as the diameter of the orbit and shorter than the post-orbital length of the head. Eye large, prominent. Nostril small, horizontally elliptical. Loreal and frontal regions rather concave. Ear orifice a vertical slit half as long as the diameter of the orbit. Body moderately long, slender. Limbs rather short and slender. Basal two-thirds of the tail expanded and flat on the upper surface, the breadth of the expanded portion two-thirds of the length of the same, suddenly contracting on its right side to a tapering peduncle bearing a small symmetrical pyriform knob. *Lepidosis* :—On the occiput, interorbital space and sides of the frontal regions are small round close-set tubercles mingled with others still smaller. The mid-frontal loreal, temporal and supraciliary tubercles are much smaller but on the last two regions are accompanied by a few of larger size. The internasal tubercles are intermediate in size, rough and, under the lens, obscurely keeled. Upper surface of the body and limbs minutely granular studded with small rosettes composed of a conical tubercle within a circle of very much smaller and numerous tubercles; the rosettes are for the most part irregularly disposed but on the flanks they tend to arrange themselves in oblique lines; they also form a regular curved line across the back and a less definite angular band across the shoulders. The lower surface is covered with small tubercles which enlarge a little on the chest and towards the lower lips. Rostral and mental subequal, small and low. Labials $\frac{20}{20}$. Above light brownish-grey, a pale band across the occiput, a second across the nape, a third very angular over the shoulders, the former two enclosing a crescent, the latter two a triangle, of the ground colour; a pale ⊤-shaped mark on the rump; many of the larger tubercles, notably those of the curved line crossing the back, white; under surface white. Entire length 94 mm.; length of the head 21; its breadth 18·5; length of the body 52; of the tail 21; of the fore-limb 22 and of the hind-limb 29 mm.

The digits of the manus are all on the same plane as indeed they are in *N. asper*. The opposition of the outer digit to the inner, given as a generic character, is limited to the pes.

DIPLODACTYLUS TÆNICAUDA.

A Diplodactylus with uniform dorsal lepidosis associated with preanal pores in the male.

Description :—Head short, shelving from the forehead to the muzzle. Snout rounded, longer than the postorbital length of the head. Ear orifice a short narrow slit. Body stout. Limbs short and strong. Digits short, broad, depressed; inferiorly with large transverse pads of which the antepenultimate is broadly cordiform and incised on its distal edge; the fourth digit has five entire plates preceded by pairs of smaller ones at the base; the terminal plates large and together cordiform. Granules of the upper surface moderate in size, round; in each interspace a minute granule. Granules of the lower surface rather large; of the flanks much smaller. Rostral pentagonal with or without a short median cleft above, its lateral angle produced to the nostril which is between the rostral, the larger upper and the five smaller posterior nasals, and the labials. Labials $\frac{12}{13}$. Mental trapezoid to triangular, larger than the foremost infralabials. No chin shields. The length of the tail, which is tapering in form, equals that of the body together with half that of the head; it is covered with square or oblong scales in regular rows but frequently every fourth row is interrupted above by a group of a few small scales. The preanal pores are in two separate curved lines each of 4-5 pores. Grey with small irregularly-shaped black spots as large as or rather larger than the yellowish interspaces. A broad chocolate band commences between the ilia and runs along the upper surface of the tail to its tip which it surrounds; the band is irregularly edged with black and white specks. Tail beneath rufous. Under surface of body dirty grey with numerous black specks. Entire length 129 mm; length of the head 17·5; its breadth 15·5; length of the body 57·5; length of the fore limb 22·5 and that of the hind limb 26 mm.

Locality, Chinchilla. Numerous examples.

The contrasting colouring of this fine Gecko distinguishes it at once from its congeners.

DESCRIPTION OF A NEW APHANIPTEROUS INSECT FROM NEW SOUTH WALES.

By A. Sidney Olliff, F.E.S.,
Assistant Zoologist, Australian Museum.

The remarkable parasite characterized below was found in large numbers on a Porcupine Ant Eater (*Echidna hystrix*), which was recently added to the collection of the Australian Museum. It chiefly affects the breast and head of the *Echidna*—especially near the throat and in the neighbourhood of the ears—attaching itself so firmly by its rostrum as to render its removal a matter of considerable difficulty. Unlike the common *Pulex irritans* and most of its congeners this species does not appear to possess the power of jumping. Specimens which I removed from their host and kept alive for some days gave no evidence of saltatorial habits.

After a careful perusal of the writings of Kolenati, Westwood and others who have treated of the genera of the order Aphaniptera, I have arrived at the conclusion that this new parasite cannot be placed in any existing genus. I therefore propose to name it *Echidnophaga.* In form it is more rounded than most of its allies and its body is much less spined. The mandibles are long and only serrate at the apical half, the fourth tarsal joint of the two anterior pairs of legs is very small, and the apical joint of the labial palpi is longer than the other joints taken together—a character in itself sufficient to distinguish *Echidnophaga* from *Pulex* and *Ceratopsyllus.*

Family. PULICIDÆ.

ECHIDNOPHAGA, gen. nov.

Body globose, membranaceous, almost destitute of bristles, except at the anus.

Antennæ capitate, four jointed.

Head moderately large; mandibles about half as long as the entire insect, not very broad, finely serrate on the outer margins at the apical half; lingua elongate, very fine; maxillæ elongate, triangular, with no appearance of an articulation at the apex; maxillary palpi four jointed, the first and second of about equal length, the third slightly shorter, the fourth a little longer than the first, acuminate at the apex; labium elongate, narrow, slightly constricted before the apex; labial palpi three jointed, the first short, the second considerably larger, the third longer than the two preceding joints taken together, pointed at the extremity.

Legs rather long; the femora somewhat thickened; tibiæ armed with rather large spines on the external margins; tarsi five jointed, claws simple; anterior and intermediate tarsi with the first three joints of nearly equal lengths, the fourth smaller, the fifth longer than the two basal joints together; posterior tarsi with the basal joint much larger than the following ones.

ECHIDNOPHAGA AMBULANS, sp. n.

Broadly ovate, castaneous, shining, with indistinct green reflections. Antennæ capitate, finely setose. Eyes rather prominent, small, pale castaneous. Head moderately convex above, finely and indistinctly crenulate in front. Thorax short. Abdomen ovate, rather strongly convex above, somewhat truncate posteriorly; the anal region armed with a few strong bristles. Legs pale castaneous, tips of the femora and tibiæ darker; tibiæ with two feeble notches on the external margins. Length 2 mm.; greatest width 1½ mm.

New South Wales. A parasite upon *Echidna hystrix*.

This species has little in common with the *Pulex echidnæ* described by Denny (Ann. Mag. Nat. Hist. XII., p. 315, pl. 37, fig. 6, 1843), from the same host.

ON A MICROSCOPIC FUNGUS PARASITIC UPON THE CUCURBITACEÆ.

By E. Haviland, F.L.S.

Side by side with the disease which has been so destructive to the maize crops during the past three months, there has existed another disease, affecting, in an almost equally destructive manner, the Cucurbitaceæ; rock and water melons, and pumpkins alike being destroyed in large quantities by its ravages. Singularly, both diseases have traversed the same tract of country, from the near neighbourhood of Sydney northwards to the Tweed River, and westward, so far as I can learn, about forty miles from the coast.

The practice, so common amongst Australian farmers, of planting pumpkins between the rows of maize; and the fact, that both these and the maize have been attacked at the same time and in the same place, have given rise to the idea that the two diseases are identical. As a matter of fact, however, they are very different; the destruction of the maize being caused by the micro-fungus *Ustilago Candollei*, one of the class *Coniomycetes*; while that attacking the Cucurbitaceæ, is *Oidium monilioides* of the *Hyphomycetes*. Although, however, the causes are different, the results are similar; the destruction of the plant in both cases.

This fungus, *Oidium monilioides*, is supposed to be identical with that known as *Erysiphe graminis*; and the genus *Oidium* is now, by most mycologists amalgamated with *Erysiphe*. They differ in some respects, but the one *(Oidium)* is considered to be but a younger state of the other. The genus *Erysiphe* has no less than five different forms of fruit, the multiform threads bearing *conidia*, *asci* contained in sporangia, the larger *stylospores* produced in other sporangia, the smaller *stylospores* generated in the pycnidia, and separate sporules which are sometimes found in the joints of the necklaces of the conidia. (1). *Oidium* has theoretically the same; but really only produces two, conidia first and at a considerable time afterwards sporangia with spores.

Of the many plants of rock and water-melon and pumpkin that I have examined, I have found none past the first or conidia state. Indeed it is at this stage that the injury is done to the plant by the exceedingly dense mycelium, which not only robs the leaves of their moisture, but by forming a close mat over the underside of the leaf, completely seals up the stomata. If we pick out from a garden an apparently healthy plant, either of melon or pumpkin, but upon which the fungus has really commenced its work, we shall find that in this early stage, many of the leaves are marked on the underside with dirty white spots, and that their edges are beginning to curl inwards. In a day or two each spot will have increased in size, and the effect will also be visible on the upper surface of the leaf. At last the spots will have so much extended their borders as to have become confluent, and the leaf will be covered over its whole surface, by the mycelium of the fungus; becoming dry and crisp and easily reduced to powder if crushed in the hand. Under the microscope, the appearance of this mycelium is that of a very beautiful interwoven mat, studded here and there with erect strings of conidia, resembling minute necklaces of pearls. At this stage, any fruit that may be upon the same branch is lost, although perhaps not larger than a small apple, by the decay of the fruit stalk. There being no transpiration from the dead leaves, any fluid that may still be passed upwards from the roots, appears to be thrown upon the fruit; and this being surcharged, while the vitality of the plant is impared or almost destroyed; decay begins, as in most other cases, at the articulations. The same thing occurs in other plants. If for instance, we give a fuchsia a great excess of water, *i. e.*, more than it can get rid of by transpiration, in a few days the leaves will become yellow and fall off if only lightly touched with the finger, breaking at the articulations, and carrying the petioles with them.

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(1) Berkeley Introd., Crypt., Bot., p. 78.

As to any remedy, or means of destroying the fungus, when once in the plant, I know of none of any real value. As the mycelium of *Oidium* does not as a rule penetrate the leaf, but confines its destructive power to the surface, it would appear easy enough to get rid of it, and perhaps to a certain extent and in the case of a single plant or so in a garden, this may be done; but to the farmer, the value of a remedy would consist only in its being applicable to crops on a large scale. In many cases amongst our small farmers the loss of a crop, even of pumpkins, is severely felt, especially as at this time, when their chief product, the maize, has been destroyed also. I think, however, that in all cases of disease likely to attack field crops, immunity must be sought rather in preventive measures. More careful drainage, and irrigation where possible; especially avoiding the repeated planting of the same ground with the same crop; and generally endeavouring to ensure vigorous plants; for it may be considered almost an established fact, that fungoid diseases rarely attack strong healthy growing plants.

Dr. Carpenter in his "*Vegetable Physiology*," speaking of the spores of micro-fungi says: "It may be considered as certain, that an admixture of the spores of any of these fungi with the corn-grains will endanger the plants raised from them; but it is equally certain, that the fungi have little tendency to develope themselves in plants that are vegetating with perfect healthfulness." In another place speaking of *Peronospora infestans* (commonly known as the "potato disease") he says, "Just as the yeast plant will not vegetate, save in a fermentable fluid; so does it seem probable, on consideration of all the phenomena of the potato and vine diseases, that neither the *Peronospora* of the one, nor the *Oidium* of the other, will vegetate in perfectly healthy plants." Perhaps it would be well if our farmers in this colony, would take hold of the fact, that it is the opinion of the highest authorities and of practical farmers, both in Europe and America, that careful cultivation will produce plants of such vigour as may be almost considered proof against the attack of these fungoid parasites.

JOTTINGS FROM THE BIOLOGICAL LABORATORY OF SYDNEY UNIVERSITY.

By William A. Haswell, M.A., B.Sc.

Lecturer on Zoology and Comparative Anatomy.

6. On the Myology of the Flying Phalanger.

(*PETAURISTA TAGUANOIDES.*)

Petaurista is a Phalanger which has undergone a modification strictly paralleled by that observable in the case of the true Flying Squirrels. A wide flap of skin extending on either side of the body between the fore and the hind limbs enables the animal, by straightening the limbs and extending the front pair forwards and the hind pair backwards, to present a broad flat surface to the air, by the parachute action of which it is enabled to fly, or rather skim, in a slanting direction from one branch to another.

An examination of the muscular system of this curious Marsupial shows that it is in all essential respects, as in fact is evidenced by the structure of the skeleton and the dentition, a very near ally of *Phalangista* and of *Cuscus*. The special modifications of the muscles connected with the act of so-called flight are very few and, with the exception perhaps of the remarkable femoro-caudal muscle, concern only the panniculus carnosus.

Muscles of the Anterior Extremity.

As in many other Marsupials the differentiation of the *deltoid* from the *trapezius* is incomplete—a portion of the fibres of the latter passing over the shoulder and taking the place of part of the former. In other words the anterior part of the trapezius in *Petaurista*, instead of stopping short at the acromion and clavicle, passes over them to the humerus, the part of the muscle between the shoulder-girdle and the arm taking the place of the middle part of the deltoid. In *Petaurista* there is no fusion between the fibres of the trapezius and those of the clavicular part of the deltoid, and none of the fibres of the former muscle are inserted into the clavicle; whereas in *Cuscus* (1) and to a less extent in *Phalangista* the anterior portion of the trapezius actually fuses with the deltoid, and some of the fibres of the trapezius are inserted into the clavicle. The arrangement of the humeral part of the trapezius seems to present considerable variations in other families; it is altogether absent in the Wombat according to Macalister. (2)

The *latissimus dorsi* in *Petaurista* differs from the corresponding muscle in *Phalangista* and in *Cuscus* in being undivided at its insertion; in the two latter genera it bifurcates to become inserted in two parts—the one part being inserted along with the *teres major*, and the other into the bicipital groove.

The humeral offset from the *panniculus carnosus* is rather more powerfully developed in *Petaurista* than in the *Phalanger;* in the former it is inserted by a broad thin tendon into the pectoral ridge of the humerus, partly in conjunction with the insertion of the pectoralis quartus, but partly independently. In *Phalangista vulpina* the muscle has no independent insertion, its tendon joining that of the pectoralis quartus, and becoming connected also with a tendinous arch between the two insertions of the *latissimus dorsi.*

In both *Phalangista* and *Petaurista,* as in *Cuscus,* the *acromio-trachelian* consists of two parts arising from the atlas and axis, and diverging to become inserted at a considerable distance from one another—the one into the distal part of the spine of the scapula and the proximal part of the acromion, and the other into the vertebral (proximal) part of the spine.

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(1) Cunningham, Reports of the Challenger Expedition, Zoology. Report on the Marsupialia, p. 3.

(2) "Myology of the Wombat and Tasmanian Devil." Ann. Mag. Nat. Hist., 4th series, Vol. V., p. 159.

The *pectorales* muscles in *Petaurista* have essentially the same arrangement as in *Phalangista* and in *Cuscus*. There is a *pectoralis major*, which consists of a large superficial part itself divisible into two, and a smaller deep part situated beneath it; a *pectoralis minor* which lies behind the deep part of the pectoralis major; and a long *pectoralis quartus* arising from the *linea alba* and the fascia over the rectus abdominis. This is an arrangement of the pectoral muscles which seems specially to characterise the present family.

In all three genera the *subclavius* is inserted wholly into the clavicle.

In *Petaurista* the *deltoid* consists of two quite separate parts, a scapular and a clavicular, separated from one another by the humeral part of the *trapezius*. In *Phalangista* also the two parts of the muscle are distinct, but, as already noticed, the relation of the trapezius to them is a little closer than in *Petaurista;* and the same, according to Cunningham, (1) holds of *Cuscus*. (2)

In *Cuscus* there are two coraco-brachiales; in *Phalangista* and in *Petaurista* one alone is represented. In the related genus *Phascolarctos* (the Koala) there are two distinct coraco-brachiales. (3)

As in *Cuscus* and *Phalangista* the *biceps flexor cubiti* consists in *Petaurista* of two parts separable throughout their length, except near the proximal end; one of these arises from the upper margin of the glenoid cavity alone, and is inserted into the coronoid process of the ulna, the other has heads of origin both from the coracoid process and the glenoid cavity, and is inserted into the bicipital tubercle of the radius.

The *epitrochleo-anconeus* seems to be of universal occurrence in the Marsupialia; it has the same form and connections in the *Petaurista* as in *Cuscus* and *Phascogale* as described by Cunningham.

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(1) L. c., p. 9.

(2) The deltoid is described by Macalister as undivided in the Koala ("The Muscular Anatomy of the Koala," Ann. Mag. Nat. Hist. (4), Vol. X., p. 127), but Young ("Myology of the Koala," Journ. Anat. Phys., Vol. XVI., p. 226), describes it as consisting of two distinct parts.

(3) Young, "Myology of the Koala." (Journ. Anat. Phys., Vol. XVI.)

As usual in the Marsupialia the *supinator longus* is a powerful muscle; as in *Phalangista* and *Cuscus* it is inserted into the scaphoid.

Both radial extensors are developed in all the three genera under consideration (1). In the *Cuscus* Cunningham describes the *extensor carpi radialis brevior* as having three heads of origin, one from the outer condyle, a second from the tendinous expansion over the supinator brevis and a third from the posterior border of the radius in its proximal part. In *Petaurista* the muscle has a similar origin but derives none of its fibres directly from the radius.

The *supinator manûs* (*extensor ossis metacarpi pollicis*) in all three genera is inserted into the trapezium as well as into the base of the metacarpal of the pollex.

The arrangement of the extensors of the digits of the manus is the same in *Petaurista* as in *Phalangista* and *Cuscus*. The *extensor sublimis* arising from the outer condyle as usual gives off tendons to the four ulnar digits. The *extensor profundus*, arising from the ulna, is composed of two parts; the *extensor secundi internodii pollicis* and the *extensor medii*; the latter is connected with the second and fourth toes as well as with the middle. Besides these there is an *extensor minimi digiti* which arises from the outer condyle and represents an *extensor secundus.* (2)

The *extensor carpi ulnaris* consists in *Petaurista*, as in *Phalangista* and *Cuscus*, of a single muscle.

In none of the three genera has the *pronator radii teres* a coronoid head of origin. This seems to be universally the case in Marsupials. (3)

The *flexor carpi radialis* in *Petaurista* and *Phalangista* is inserted, as in *Cuscus* into both the second and third metacarpals.

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(1) Macalister describes a *single* radial extensor in the *Phalanger* as in *Macropus*, *Phascolomys* and *Sarcophilus*.

(2) Humphrey. "Observations on Myology." p. 185.

(3) Macalister. "On the Myology of the Wombat and Tasmanian Devil." Ann. Mag. Nat. Hist., 4th series Vol. V., p. 1. Young, "On the Muscular Anatomy of the Koala." Journ. Anat. Phys., Vol. XVI., p. 228.

The *palmaris longus* is a simple slender muscle in the specimens of *Petaurista* examined. It is double in the *Phalanger* in some cases; sometimes single. In the specimen of *Cuscus* dissected by Cunningham it consisted of three parts.

The *flexor carpi ulnaris* presents, as in most, though not all, Marsupials, two heads of origin; one from the internal condyle, condyle, and the other from the olecranon.

The flexor muscles of the digits in *Petaurista* and *Phalangista* as in *Cuscus*, are all more or less closely amalgamated at their origin, where they arise in a mass from the inner condyle and the proximal parts of the ventral surface of the radius and ulna. The superficial part of the common muscular mass gives off slender perforated tendons to the four ulnar digits; while the tendons from the deep part are inserted into the terminal phalanges of all the digits. This plan of arrangement of the flexor muscles of the digits seems to be very general among the marsupials. (1)

MUSCLES OF THE POSTERIOR EXTREMITY.

The *gluteus externus* consists in *Petaurista*, as in *Cuscus* and *Phalangista*, of three parts, the hindermost part being the *agitator caudæ*, the middle part the *gluteus maximus*, and the anterior part, according to Cunningham, having the nerve supply of the *tensor fasciæ femoris* of other mammals. But besides these, *Petaurista* possesses an additional muscle belonging to this series—a muscle not represented in *Phalangista* or *Cuscus*, nor, so far as I am aware, in any other Mammal. It is a ribbon-like muscle, situated on the same plane as the adductor caudæ; it arises from the seventh caudal vertebra, and, running over the biceps and semitendinosus, is inserted into the distal end of the femur on its outer aspect. A slender slip detached from it joins the *agitator caudæ*. It seems very probable that the development of this peculiar muscle is connected with the special habits of the flying phalanger; the name *long femoro-caudal* will serve to indicate its connections without implying any theory of its functions.

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(1) *Vide* Macalister. L.c.

The *pyriformis* is quite a distinct muscle in *Phalangista* (as well as in *Petaurista* and in *Cuscus*) and is not amalgamated with the gluteus medius as stated by Professor Macalister. (1)

The arrangement of the *biceps* described by Cunningham as obtaining in *Cuscus* is almost identical with that observed in *Phalangista* and *Petaurista.* The muscle consists of an ischial part arising with the semitendinosus from the ischial tuberosity and spreading out in a triangular form distally to become inserted into the fascia of the leg; and a caudal part which arises from the transverse processes of the first two caudal vertebræ, and, after becoming closely united for a short distance with the semitendinosus, bifurcates—one part joining the ischial division of the muscle and the other becoming inserted into the inner side of the tibia. In all three genera the *bicipiti accessorius* is absent.

In *Petaurista* and *Phalangista* the *rectus femoris* has only a single head; in *Cuscus* Cunningham describes a slender second head arising from the spine of the ilium. In the Koala, Macalister describes the origin as single. (2)

In *Phalangista,* as in *Cuscus,* the *gracilis* has no connection with the marsupial bone. In *Petaurista* on the other hand a few fibres are derived from the base of that bone.

Cunningham describes only two *adductors* as occurring in *Cuscus* —the *adductor brevis* and the *adductor magnus ;* but in both *Phalangista* and *Petaurista* all three adductors are well represented.

In *Cuscus* and *Phalangista* the *gastrocnemius* consists of two parts which are separable throughout, the inner part arising from the back of the internal condyle of the femur, while the outer derives its origin from the sesamoid at the head of the fibula and from the outer condyle. In *Petaurista* the muscle has the same origins, but the two halves are intimately united in the middle of the calf.

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(1) "Myology of the Wombat and Tasmanian Devil," Ann. Mag. Nat. Hist. (4th series), Vol. V., p. 167.

(2) "Muscular Anatomy of the Koala." Ann. Mag. Nat. Hist. (4), X.

As in the phalanger the *plantaris* is intimately united in *Petaurista* with the deep surface of the outer head of the *gastrocnemius*. In *Cuscus* it is described by Cunningham as being quite distinct from the latter muscle. In the Koala, according to Macalister, the union is close.

The *tibialis posticus* is represented in *Petaurista*, as in *Phalangista* and *Cuscus*, by two separate muscles both inserted into the scaphoid. (1)

As in the forelimb, so also in the hind limb, the *flexor muscles of the digits* are united in all three genera into one muscular mass. This arises from the posterior surface of the fibula : the superficial part gives origin to tendons passing to the third, fourth and fifth toes ; the deep part supplying tendons for all the digits including the hallux.

The *extensor longus hallucis* of the phalanger is described by Macalister as being inserted in the index as well as into the hallux, but this is certainly not the case in the specimens I have examined ; in *Petaurista* also, as in *Cuscus*, the insertion is only into the terminal phalanx of the hallux.

The *extensor brevis digitorum* in *Phalangista* and *Cuscus* consists, as regards its origin, of a fibular and a pedal part, the former consisting of two slips giving tendons to the fourth and fifth toes, while the pedal part, arising from the calcaneum, ends in delicate tendons for the second and third toes. In *Petaurista* the pedal part of the muscle is not developed. (2)

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(1) According to Owen (Anat. of Vert. III., 16), the tibialis posticus in *Phalangista vulpina* divides into two tendons which are inserted into the internal and middle cuneiforms.

(2) Owen regards the part of the fibular *extensor brevis* going to the fifth toe as an internal *peroneus*. (Anatomy and Physiology of Vertebrates, Vol. III., p. 16.)

THE INSECTS OF THE FLY RIVER, NEW GUINEA, "COLEOPTERA."

By William Macleay, F.L.S., &c.

(*Continued from page* 157.)

Family. CURCULIONIDÆ.

Sub-Family. BRACHYDERIDES.

118. Rhinoscaphus Doriæ. Pascoe.

Ann. Mus. Civ. Genoa. Ser. II., Vol. II., 1885.

There are a number of specimens varying in size and colour, of what I take to be this species. Mr. Pascoe's description must I fancy have been taken from a worn and discoloured specimen, for all those before me show silvery-green patches and markings, instead of whitish as in the published description.

119. Pachyrhynchus quadripustulatus. Gestro.

Ann. Mus. Civ. Genoa, Vol. VII., p. 1,008.

I think there can be no doubt that *P. verrucosus,* Bates (Proc. Zool. Soc., 1877, p. 184), is identical with this species, but much more fully described. Gestro's description was probably taken from a rubbed specimen.

120. Apocyrtus Froggatti. n. sp.

Black, subnitid. Rostrum rugosely punctate, thinly clothed with short setiform ashen scales, and with two small ridges converging to the head, scrobes short and large. Head smooth behind, punctate in front, and emarginate at the rostral suture. Antennæ strong, the scape reaching to the thorax, and nearly as long as the funicle and club combined. Thorax moderately convex, broader behind than in front, longer than broad, and very rugosely punctate. Elytra very convex and ampliated behind, much constricted towards the apex which is round, and rugosely punctate throughout, there is a patch of silvery-green scales near each shoulder, and the apical third is more or less densely clothed with scales of the same colour, enclosing a large round smooth spot near the apex of each elytron.

Length, 5½ lines.

121. Ottistira fasciata. n. sp.

Black, opaque, covered with very short greyish or ashen scales; a very fine smooth keel extends from the apical emargination of the rostrum to near the back of the head. The thorax is very little broader than the head, longer than broad, truncate and nearly of the same width in front and behind, very little rounded on the sides, and with an almost obsolete transverse constriction before the middle.

The elytra are square at the humeral angles, much broader than the thorax, convex, and terminate in a rounded point. On each elytron there are eight strong striæ with oblong large somewhat distant punctures in them. Two broad and rather indistinct fasciæ composed of whitish scales cross the elytra, one about the basal third the other about an equal distance from the apex, having between them a rather narrow space quite denuded of scales, giving the appearance of a distinct black fascia, and on this space on the third interstice from the suture is a rounded conical tubercle.

Length 4 lines.

Sub-Family. OTIORHYNCHIDES.

122. Apirocalus cornutus. Pasc.

Cist. Ent., II., p. 590.

123. Coptorhynchus tessellatus. Blanch.

Voy. Pole. Sud. Ins., p. 223, pl. 15, fig. 10.

124. COPTORHYNCHUS SPECULATUS. n. sp.

Black, nitid, ornamented with minute white scales, rostrum short, gibbous above the scrobes, and constricted a little at the eyes, which are small, round, and prominent. Antennæ long and slender, the second joint of the funicle rather longer than the first. Head deeply emarginate at the rostral suture. Thorax densely punctate,—each puncture occupied by a minute flat rounded scale; longer than broad, a little narrower in front than behind and uniformly rounded on the sides. Elytra of the width of the thorax at the base, much ampliated and convex behind, strongly striated with large punctures, and variegated with white scales, most conspicuous on the base and humeral angles, and also in one or two short interrupted vittæ near the apex. The sides of the meso- and metasternum are marked in the same way, the thighs are much pedunculated.

Length, 2½ lines.

125. COPTORHYNCHUS BOMBICOLLIS. n. sp.

Black, subopaque, granulate-punctate, clothed with setiform and flat scales of an ashen colour. Rostrum with a very fine keel, extending to between the eyes. Antennæ shorter and stronger than in *C. speculatus.* Thorax much longer than broad, very convex, very much bulged out at the sides, densely and coarsely punctured, with the sides, the median line and the apex, densely cinereo-squamose.

The elytra are very little longer than the thorax, and scarcely so wide, and are roughly punctured in rows, the interstices being more or less densely cinereo-squamose, giving the appearance of much interrupted vittæ; the setiform scales are most conspicuous near the apex of the elytra. The hind thighs are much pedunculated, the fore ones much swollen near the apex.

Length 3½ lines.

126. COPTORHYNCHUS NUDUS. n. sp.

Black, opaque, squamose, punctate. Rostrum stout. Head emarginate at the rostral suture, and immediately behind between the eyes are three very short striæ, one central, the others close to the eyes. Antennæ long, rather stout, the first joint of the funicle as long as the second. Thorax longer than broad, moderately rounded on the sides and convex, the minute setiform whitish scales on the punctures lying transversely. Elytra convex, striate, the punctures small, the interstices uneven, with very minute shining granules. On each elytron a little way from the apex and near the side, there is a round spot quite smooth and free from scales.

Length, 2 lines.

Sub-Family. HYLOBIIDES.

127. ACLEES POROSUS. Pascoe.

Jour. Linn. Soc., Lond., XI., p. 172.

128. ORTHORHINUS PATRUELIS. Pascoe.

Ann. Mus. Civ. Genoa, 1885, p. 225.

129. NIPHADES COSTATUS. Pascoe.

Jour. Linn. Soc., Lond., Zool., XI., p. 174.

Sub-Family. ATTELABIDES.

130. EUOPS CUPREOSPLENDENS. n. sp.

Head and thorax golden green, elytra of a coppery golden lustre; rostrum, legs, scutellum, and the whole under surface dark metallic blue. Head long behind the eyes, densely punctate, and slightly transversely constricted near the middle. Thorax slightly longer than the width at the base, marked with very minute transverse striolae, a very slight transverse depression about the middle and another well marked at the base. Scutellum quadrangular, almost square. Elytra broad at the base, with two sharp notches to receive two small thoracic lobes, the humeral angles rounded and prominently toothed or hooked on the sides; there are nine fine minutely punctured striæ on each elytron.

Length, 1¾ lines.

Sub-Family. BALANINIDES.

131. Balaninus tersus. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 235.

Sub-Family. LÆMOSACCIDES.

132. Læmosaccus petulans. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 238.

Sub-Family. ALCIDIDES.

133. Alcides Gestroi. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 242, pl. 1, fig. 8.

134. Alcides rostratus. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 241.

135. Alcides profluens. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 239.

136. Alcides brevicollis. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 243.

137. Alcides elegans. Guer.

Voy. Coquille, II., p. 121, pl. 6, fig. 6.

Sub-Family. MNEMACHIDES.

138. Acicnemis ornata. n. sp.

Opaque, dark brown, mixed with spots and patches of reddish brown and white. Rostrum longer than the head and thorax combined, curved, cylindrical and slender, smooth on the anterior half, scaly and a little thickened towards the base. Scape of antennæ rising about the middle of the rostrum and scarcely reaching the eye, the funicle long and slender, the second joint longest. A small impression in the narrow scaly portion of the head between the eyes. Thorax slightly convex, slightly tuberculate on each side of the median line in advance of the middle, gently rounded on the sides, longer than broad, truncate at the base, and densely punctate and squamose. Elytra a little broader than the thorax at the base, not ampliated behind, rather flat, more then twice the length of the thorax and finely striate punctate, the punctures each with a short white setiform scale; white and fulvous spots are numerous on the elytra, but they seem to be quite irregular. The legs variegated like the body, but the base of the thighs are piceous, and there is a whitish ring at the commencement of the swollen part.

Length, 2½ lines.

139. Acicnemis lobicollis. n. sp.

Entirely clothed with dense ashen scales varied with brown spots. The rostrum resembles that of *A. ornata*, but the smooth portion occupies about two thirds of its length, and the scape of the antennæ takes its rise rather behind the middle. The funicle is less slender also than in that species and the first joint is much shorter than the second. The thorax is rather flat, a little longer than broad, gently rounded on the sides which are sharply emarginated near the posterior angle, biemarginate at the base and largely lobed at the scutellum. A longitudinal impression near each side occupied by palish scales gives an appearance of indistinct vittæ, a short pale vitta may also be detected at the centre of the apex. The elytra are wider than the thorax and more than twice the length, they are moderately convex, not ampliated behind, and terminate each in a small round apex; they are finely punctate-striate, each puncture bearing a short white setiform recumbent scale. The brown and white ornation of the elytra, seems to have no definite order. The legs and under surface are marked similarly.

Length, 3 lines.

Sub-Family. ITHYPORIDES.

140. PANTOXYSTUS RUBRICOLLIS. Boisd.

Voy. Astrol., II , p. 442.

141. PANTOXYSTUS CYANEUS. n. sp.

This species only differs from *P. rubricollis* in being a little smaller, and entirely of a very nitid cyaneous colour.

Length, 2 lines.

Sub-Family. CRYPTORHYNCHIDES.

142. EUTHYRHINUS DORSALIS. n. sp.

Chocolate brown, opaque, scaly. Head and base of rostrum sparingly clothed with yellowish scales with a large spot in front velvety brown. The thorax is minutely punctured and granulate, with two small discal spots and the entire sides densely cinereo-squamose. The elytra are profoundly bilobed at the base, sharply pointed at the apex, striate-punctate, and variegated with brown, yellow and whitish scales, the most conspicuous of these forming an interrupted yellowish patch in the middle of the basal half. The under surface is densely niveo-squamose interspersed with minute luteous specks. This species differs "inter alia" from *E. meditabundus* in being much smaller, in having the basal lobes of the thorax much more acute and triangular, and in being without the raised basal margin on the thorax on each side of the sutural lobe as in *meditabundus*.

Length, 3 lines.

143. EUTHYHINUS IRRORATUS. n. sp.

This species is much smaller than the last, the rostrum is densely punctate, its base and a line at each eye niveo-squamose, the front of the head brown. Thorax dark brown, minutely granulate, with a narrow smooth median line and two minute tubercles on the disk, the posterior angles and the sides niveo-squamose ; the three lobes on the base of the thorax are uniformly rounded. The elytra are covered all over with whitish spots and specks, a little thinner behind the middle, giving a little of the appearance of a black fascia. The elevation on each side of the scutellum so marked in all of the genus is in this species particularly so, and appears to be formed of nitid granules. In other respects it resembles the last species.

Length, 2 lines.

144. BLEPIARDA VITIATA. Pascoe.

Jour. Linn. Soc., Lond., Zool., XI., p. 210.

145. POROPTERUS CONCRETUS. Pascoe.

Ann. Mus. Civic. Genoa, 1885, p. 262.

146. POROPTERUS PERTINAX. Pascoe.

Ann. Mus. Civic. Genoa, 1885, p. 263.

I am doubtful of the identity of this insect.

147. ORPHANISTES GRANDIS. n. sp.

I cannot find any genus which exactly suits this fine insect, but its affinity to *Orphanistes* is very marked.

Black, subnitid, elongate, oval. Rostrum a little depressed and arcuate, finely punctate, more densely at the base, where it is ridged. Head globular, nitid, thinly punctured. Thorax longer then broad, narrow and rounded in front, broader and biemarginate at the base, very moderately rounded on the sides and scarcely convex above, foveated, finely carinated on the median line—the carina not quite reaching the base or apex—and covered with a very dense mass of white scales excepting on the apex, and a large nearly square patch in the middle of the base. Elytra much broader than, and twice the length of, the thorax, the humeral angles sloping and strongly tuberculate immediately behind, gradually narrowed from thence to the apex, strongly foveated, the foveæ large and square, and separated by narrow uneven insterstices, and marked with several white spots on the anterior half, and with a broad white fascia near the apex. Thighs long, ringed with white, with a tooth beneath, the abdominal segments each with two large white spots.

Length, 8 lines.

There are five other species of *Cryptorhynchides*, all single specimens, in the collection, but I cannot satisfactorily determine the genus of any of them.

Sub-Family. ZYGOPIDES.

148. MECOPUS TENUIPES. Pascoe.

Ann. Nat. Hist., ser. 4, Vol. VII., p. 205.

149. ARACHNOPUS BINOTATUS. Pascoe.

Ann. Nat. Hist., ser. 4, Vol. VII., p. 258.

150. DIOMIA TETRAGRAMMA. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 285.

151. IDOTASIA AMPLIATA. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 286.

Sub-Family. BARIDIDES.

152. MYCTIDES NITIDULUS. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 293.

153. PSEUDOCHOLUS CINCTUS. Pascoe.

Journ. Linn. Soc., Lond., XII., p. 56.

Sub-Family. CALANDRIDES.

154. RHYNCOPHORUS KAUPII.

R. velutinus Fairm. Ann. Soc. Ent. Belg., XXVII., p. 40.

155. DIATHETES DISPAR. Chevr.

Le Nat., II., p. 333, 1880.

156. ANATHYMUS SINGULARIS. Pascoe.

Ann. Mus. Civic., Genoa, 1885, p. 299, pl. III., fig. 13.

157. SPHENOPHORUS OBSCURUS. d'Urville.

Boisd. Voy. Astrol, II., p. 148.

158. SPHENOPHORUS NEBULOSUS. n. sp.

Reddish brown, opaque ; rostrum thickened and scaly towards the head and with a fine stria along the whole of its length ; the club of the antennæ very short and truncate.

The thorax is depressed and black on the median line. The elytra are strongly striate-punctate, the insterstices convex, the whole is indistinctly clouded with different shades of brown ; the pygidium is rounded with four raised lines or costæ densely clothed with scales. The femora are unarmed.

Length, 3 lines.

159. GANAE PULCHELLA. Pascoe.

Ann. Mus. Civic. Genoa, 1885, p. 307, Pl. 3, f. 9.

160. LAOGONIA INTRUSA. Pascoe.

Jour. Linn. Soc., Lond., XII., p. 76.
This is probably a new species.

Sub-Family. COSSONIDES.

161. COSSONUS BASALIS. Pascoe.

Ann. Mus. Civic. Genoa, 1885, p. 317.

Family. BRENTHIDÆ.

162. EUPSALIS PROMISSA. Pascoe.

Ann. and Mag. Nat. Hist., 1872, t. X., p. 323, Pl. XV., fig. 8.

163. ECTOCEMUS WALLACEI. Pascoe.

Journ. of Ent., I., p. 388.

164. MEGACERUS POGONOCERUS. Fairm.

Ann. Soc. Ent. Belg., XXVII., 2. p. 43.

165. LEPTORHYNCHUS BICOLOR. Guér.

Voy. Coquille, p. 109, t. 6, f. 11.—Boisd., Voy. Astrol., II., p. 312.

166. LEPTORHYNCHUS LINEARIS. Pascoe.

Journ. of Ent., I., p. 390

167. LEPTORHYNCHUS ANGUSTATUS. Guér.

Voy. Coquille, p. 111, t. 6, f. 12.—Boisd., Voy. Astrol., II., p. 318.

168. PHOCYLIDES PASCOEI. n. sp.

Dark brown, opaque, rostrum very long, canaliculate along the whole upper surface, rectangular, and widening a little behind the insertion of the antennæ. The antennæ are short, moniliform, and in the male are inserted in advance of the middle of the rostrum. The head is rectangular. roughly punctate and a little longer than the width. Thorax narrowed at the apex, widening in the middle, and slightly narrowed at the base, the length more than three times its width, largely sulcate in the middle, and densely punctate. The elytra are profoundly punctate-striate, the punctures large and contiguous, the stria on each side of the suture broad and smooth, the third interstice near the base, and two or three places on the first interstice towards the apex of a dark piceous red. In the male the prolongations of the elytra are long, depressed and margined, in the female they are short.

Length, ♂ 20 lines.

169. MIOLISPA CORDIFORMIS. n. sp.

Piceous red, nitid, rostrum as long as the thorax, nearly cylindrical, widened at the apex, and canaliculate on the basal part. Antennæ short, moniliform, the joints from the second to the apex slightly thickening and taking their rise in the male from the middle of the rostrum, in the female from near the base. Head nearly square, smooth on the vertex, tricanaliculate between the eyes. Thorax subcylindrical, widest behind the middle, deeply sulcate on the median line and without punctures. Elytra of the width of the thorax and a little longer, with two broad smooth striæ next the suture with a smooth raised interstice, the rest very finely and smoothly striate-punctate. The suture of the elytra is of a brighter red than the rest. The legs are short and of a pale piceous red, the thighs are clavate and pedunculate, and the tibiæ short, thick and compressed.

Length, 4 lines.

170. MIOLISPA EBENINA. n. sp.

Uniform bluish-black, nitid. Rostrum cylindrical for three fourths of its length, enlarged and gibbous near the base. The antennæ rise from the swollen portion of the rostrum, and are short, moniliform and almost clavate, the last three joints being conspicuously larger. The head is nearly square, but rather longer than broad, and slightly narrower at the base than in front, and is deeply sulcate on the median line. The thorax is narrow in front, much rounded behind the middle, and quite smooth with the median line rather lightly marked. Elytra uniformly and profoundly striate-punctate. The legs longer and thinner than those of the last species.

Length, 4½ lines.

These two species should be placed in different genera, and I think that strictly neither of them should be placed in the genus *Miolispa.*

171. JONTHOCERUS PAPUENSIS. n. sp.

Entirely of a nitid pale piceous red. Head and rostrum together scarcely equal in length to the thorax, all of these perfectly smooth; the rostrum is flat and a little curved downwards towards the apex, the antennæ rise from about the middle of the rostrum and are short for the genus, reaching to the base of the elytra. The thorax has no median line, but is transversely constricted at the apex and base. The elytra are rather flattened on the disk, with a raised suture and a depressed space on each side, broadest at the base and running out before the apex, with two fine carinæ in them. The tooth on the inside of the fore tibiæ is very large.

Length, 2 lines.

Family. ANTHRIBIDÆ.

172. Xenocerus arciferus. Blanch.

Voy. Pole. Sud., IV., 1853, p. 196, Pl. 13, fig. 4.

173. Litocerus perplexus. Pascoe.

Ann. Nat. Hist., ser. 3, Vol. V., p. 47.

174. Litocerus fasciatus. n. sp.

Black or dark brown, densely covered except in a few places with a short ashen grey pubescence, the bare places being, the rostrum, two broad lateral vittæ and some small spots on the disk of the thorax, two round spots near the base, the outer the smallest, a patch near the middle of the lateral margin, a wavy fascia behind the middle, and two small spots near the apex on each elytron, and a large spot on the side of metasternum. The elytra are lightly striate-punctate. The pubescence under the eye and on the sides of the sterna is snowy white, the legs are of a very pale red.

Length, 5 lines.

175. Litocerus parvulus. n. sp.

Black, clothed with a very short silky greyish or pale drab pubescence with the exception of the humeral angle, four small spots placed transversely near the base, two very minute near the suture a little behind these, a broad fascia about the middle not reaching the suture and extending on each side on the under surface, and one or two very small spots between that and the apex.

Length, 3½ lines.

176 Litocerus subconvexus. n. sp.

This species should perhaps be placed in another genus. It is more rounded and convex than the others, and has a remarkably short broad rostrum. The general colour seems to be brown much varied with white and fulvous, the eyes are very large, round and contiguous, being only divided by orange ciliæ. The thorax is transverse and moderately convex, with a narrow median impression, four indistinct fulvous irregular vittæ on the disk, and the sides white. The elytra are much bulkier than the thorax and about twice the length, and striate-punctate, with, behind the middle, a broad wavy whitish fascia not reaching the sides, and with, in front and behind it, an equally irregular fascia of dark brown; the pygidium is triangular and tricarinate.

Length, 5½ lines.

177. NESSIARA UNITUBERCULATA. n. sp.

Dull opaque brown, flat. Thorax much wider behind than in front, the median line lightly marked, and on each side of it in front of the middle there is a small depression occupied by a granule. The elytra are flat, very finely striate-punctate, the interstices plain; on the 4th interstice near the apex there is a prominent tubercle, behind these the elytra descend vertically, and the space between the tubercles is much excavated. The under surface is entirely covered with a greenish-white pubescence.

Length, 3½ lines.

178. NESSIARA IRRORATA. n. sp.

Brown, varied with white, yellow and fulvous pubescence. Head nearly vertical in front, and entirely covered with cinereous pubescence. The thorax is convex, and widens rapidly to near the base, the median line is distinctly depressed and clothed with a short line of white pubescence at the apex and from that to near the base it is lined with a reddish pubescence, the whole of the back part is varied with whitish ill-defined spots. The elytra are of the width of the thorax at the base and twice its length, very variegated, striate-punctate, the second interstice elevated on the apical third into a sharp glabrous ridge, the whole more or less marked with small white spots. There are many and various whitish marks besides, the most distinct being one which seems to surround the humeral angles.

Length, 4 lines.

Family. CERAMBYCIDÆ.

Sub-Family. LAMIIDES.

179. PITHOMICTUS DECORATUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 16, Pl. II., fig. 1.

180. ÆGOMOMUS ORNATUS. n. sp.

Bluish-black, nitid. Head deeply furrowed on the median line. Thorax scarcely wider than the head, slightly transverse, slightly broader at the base than at the apex, very slightly rounded on the sides, with a minute tooth behind the middle, and sparsely punctate, chiefly on the sides. Elytra much broader than the thorax at the shoulders, narrowed towards the apex which is slightly truncate, irregularly punctured on the basal half and marked with an oval spot near the scutellum, a larger oblique transverse one about the middle, and a minute one between that and the apex, of a short luteous pubescence The first two of these spots (the basal and medial) are bordered in front with snow-white pubescence, and there are three short oblique stripes of the same near the apex. There is also a white oblique streak on the side of the mesosternum.

Length, 5 lines.

181. ESCHARODES PAGANUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 72.

182. SYMPHYLETES SQUAMOSUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. II., p. 79.

183. SOTADES PLATYPUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 75, Pl. IV., fig. 4.

This may be a new species, in some respects it scarcely answers to Mr. Pascoe's description.

184. PRAONETHA STRUMOSA. Pascoe.

Trans. Ent. Soc., Lond., s. III., Vol. III., p. 180.

185. PRAONETHA VARIABILIS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 181.

186. PRAONETHA PALLIDA. n. sp.

Densely covered with a pale yellowish or ashen pubescence with brown spots. The head has the median line finely carinated and free from pubescence, with a short transverse brown spot between the antennæ. The antennæ reddish-brown, sparingly pubescent, the fourth joint with a large whitish ring. The thorax is rather flatter than in *P. strumosa*, and almost uniformly cinereo-pubescent, with the exception of two large brown spots at the base on each side. The elytra are broader than the thorax, distinctly shouldered and striate-punctate, on the third interstice there are elongate, tufted elevations, the humeral regions and a large central spot on the suture are brown, the rest is of a pale cinereous hue with small brown spots, and an indistinct pale brown patch extending from the sides to the central spot

Length, 6 lines.

187. PRAONETHA BIZONATA. n. sp.

Dark brown varied with fulvous. Head deeply impressed longitudinally, particularly between the antennæ. The thorax has two broad black vittæ on the disk, the intermediate space is of brick red. The elytra are not broadly shouldered as in *P. pallida*, and have only one (not tufted) tubercle near the base of the third interstice. A palish fascia extends from behind the shoulder in an oblique depression to the middle of the elytra, bounding by a defined ridge a large sooty black spot which occupies all the side of each elytron to the apex, excepting a small white spot near the side. The puncturation is finer than in the last species.

Length, 6 lines.

188. BATOCERA LÆNA. Thoms.

Arch. Ent., 1, p. 450, Pl. 19, f. 1. Mon., p. 70, Pl. 7, f. 1.

189. DIHAMMUS LONGICORNIS. Thomson.

Arch. Ent. 1, p. 444. Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 291.

190. GNOMA AFFINIS. Guér.

Voy. Coquille, 1830, p. 136, Pl. 7, fig. 10. Boisd. Voy. Astrol., II., p. 509.

191. GLENEA PICTA. Fab.

Stenocorus pictus Fab. Syst. El., II , 306, *G. picta* Pasc. Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 337, Pl. XVII., fig. 6.

192. GLENEA ELEGANS. Ol.

Saperda elegans Oliv. IV., p. 15, Pl. 4, fig. 40. *G. elegans* Pascoe, Trans. Ent. Soc., Lond., ser. 14, Vol. III., p. 374.

193. OBEREA MUNDULA. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 432.

194. HESTIMA TRIGEMINATA. Pascoe.

Trans Ent. Soc., Lond., ser. III., Vol. III., p. 447.

195. ORINŒME RUBRICOLLIS. n. sp.

Elongate, very narrow, pale red on the head, thorax, base of elytra and legs, and blackish brown on the rest of the elytra, the abdomen, the antennæ, the mandibles and the tarsi. The head is rather convex on its vertical face, and has a very finely marked median line. The thorax is a little longer than broad, and scarcely so wide as the head, it is nearly cylindical, and is quite opaque. The elytra are about the width of the thorax at the base, and get narrower behind; they are more than four times the length of the thorax, somewhat bispinose at the apex, and covered with large punctures in regular rows.

Length, 7 lines.

196. ELAIS BIMACULATA. Gestro.

Ann. Mus. Civic. Genoa, IX., p. 173.

197. SPHINGNOTUS MIRABILIS. Boisd.

Tmesisternus mirabilis Boisd. Voy., Astrol. 11, p. 468, Pl. VIII., fig. 5. *S. mirabilis* Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 483.

198. TMESISTERNUS TRIVITTATUS. Guér.

Voy. Coquille, p. 130, Pl. 7, fig. 12. Blanch. Voy. Pole. Sud., IV., p. 284, Pl. 16, fig. 15. Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 464.

199. TMESISTERNUS POLITUS. Blanch.

Voy. Pole. Sud., IV., p. 288, Pl. 16, fig. 17. Thomson Class. Longic. p. 358. Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 461.

200. TMESISTERNUS OBSOLETUS. Blanch.

Voy. Pole. Sud., IV., p. 282, Pl. 16, fig. 20.

T. obsoletus. Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 474, seems to be a very different insect.

201. TMESISTERNUS FROGGATTI. n. sp.

Dark brown, nitid, interspersed with patches of short, yellowish white pubescence. The head is sparsely punctate, and covered with yellowish pubescence, excepting a narrow median line, and a slightly raised line on each side, interrupted by the eye. The thorax is similarly pubescent, the punctures and median line only being glabrous. The scutellum is tranverse, rounded and glabrous The elytra are wider at the base than, and more than three times the length of, the thorax, irregularly punctate, bistriate on each side of the suture, and with a large smooth nearly square spot on the suture near the base sending out a branch from each angle, a zigzag fascia behind the middle, a smaller fascia behind the apex, and numerous other spots and markings of a nitid brown.

Length, 8 lines.

202. TMESISTERNUS LINEATUS. n. sp.

In form very like the last species, the median line of the head more deeply impressed, and that of the thorax not glabrous. A broad, smooth vitta occupies the sides of thorax, and extends along the lateral margins of the elytra to the apex. The scutellum is pubescent and the elytra are marked with about four, more or less interrupted lines of pubescence from the base to near the apex, where the pubescence takes the form of oblique spots and lines. Two or three of these spots encroach on the lateral vitta near the apex, and one, very minute, above the middle. There are three slightly raised lines on each elytron. The under surface is whitish, with small brown spots.

Length, 7 lines.

203. TMESISTERNUS THOMSONI. Pascoe.

Trans. Ent. Soc., Lon., ser. III., Vol. III., p. 475.

204. TMESISTERNUS MONTICOLA. Gestro.

Ann. Mus. Civic Genoa IX., p. 161.

205. TMESISTERNUS TRANSVERSUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 476, Pl. XIX., fig. 5.

206. TMESISTERNUS PLEURISTICTUS. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 478.

207. TMESISTERNUS LATERALIS. n. sp.

Very like *P. pleuristictus,* and of the same group as it and *P. lineatus.* The thorax has the same broad lateral vitta, the median line is broad and smooth, the scutellum is triangular, and the elytra marked very much as in *P. lineatus* but with a large round yellow spot near the middle of the lateral brown vitta, and two bands of pale pubescence crossing it near the apex. The antennæ and tarsi are reddish.

Length, 4½ lines.

Sub-Family. CERAMBYCIDES.

208. CERESIUM PACHYMERUM. Fairm.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 542.

209. TETHIONEA STRUMOSA. Pascoe.

Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 544.

210. CHLORIDOLUM DORYCUM. Boisd.

Voy. Astrol., p. 519, Pl. 8 fig. 4.—Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 590.

211. XYLOTRECHUS AUSTRALIS. L. and G.

Mon. Clyt., p. 99, Pl. 19, fig. 118.—Pascoe, Trans. Ent. Soc., Lond., ser. III., Vol. III., p. 607.

212. CLYTUS VELUTINUS. n. sp.

Velvety black. Head with yellowish pubescence on its vertical face, and a glabrous raised median line, which divides into three between the antennæ, but is prolonged to the occiput only in the median line, another short ridge close to the antennary tuber. The thorax is globular, with a white line on the anterior margin behind the eyes, extending on to the sides of the prosternum, and a pale thin pubescence covering a broad space on the apex and base, both spaces showing the median line clear, and the basal with two additional clear spaces. Elytra more than three times the length of the thorax, truncate, with a very small external tooth at the apex, marked before the middle with an oval, oblique spot on each side of the suture, a large triangular spot on the suture about the middle, a small wavy mark near the sides and the apex yellowish white, the under surface barred with white. Thighs pedunculate, reddish at the base.

Length, 7 lines.

213. CLYTANTHUS ANGUSTULUS. n. sp.

Of narrow elongate form, dark reddish brown or black, opaque. The thorax is twice as long as broad, convex above and on the sides, and clothed with a greenish white pubescence which is thin on the disk. The elytra are not wider than the thorax and more than twice the length, a little obliquely truncate at the apex with an acute external tooth and marked with three fasciæ which do not reach the sides, and the apex white. The fasciæ are disposed as follows, the first fascia near the base forms a cross with the suture which is also white as far as the second fascia, the second fascia is broader than the first, oblique and of triangular form, the third is behind the middle and forms two triangles, the suture making the base of each. The scutellum is snow white and so are several spots on the under surface.

Length, 5 lines.

There are five other species of *Longicorns* in the collection, of doubtful genera.

This concludes the list of Coleoptera collected on the Fly River, New Guinea, with the exception of the large family of the Phytophagi, which are represented by over 60 species chiefly of the genera *Crioceris, Adorium, Aulacophora and Aesernia,* many of them undescribed. I am, however, deterred from proceeding with the completion of the list as I find that Mr. Martin Jacoby is now engaged upon the "Descriptions of the new genera and species of the Phytophagous Coleoptera of the Indo-Malayan and Austro-Malayan subregions, contained in the Civic Museum of Genoa," and as that museum is known to possess most of the insects taken by Signor D'Albertis on the Fly River, it becomes almost a certainty that, if I proceeded with my present work, Mr. Jacoby and I would be, in many cases, describing the same insects.

THE MOLLUSCA OF THE PAREORA AND OAMARU SYSTEMS OF NEW ZEALAND.

By Captain F. W. Hutton,

Hon. Mem. Linn. Soc. of N. S. Wales.

The correlation of the Tertiary rocks of Australia with those of New Zealand is one of considerable interest, but one on which, as yet, no well grounded opinion has been given. As a contribution towards arriving at correct ideas on the subject, I offer to the Society a list of the Mollusca of the Pareora and Oamaru Systems in New Zealand, which are probably of Miocene and Oligocene age. The list is by no means complete as no catalogue of the large collections brought to the Wellington Museum since 1873 has been published; but it is fuller than any previous list, as it includes, for the first time, the Tertiary Mollusca in the Canterbury Müseum collected by Dr. von Haast, between 1862 and 1875, during his geological survey of Canterbury, and those collected by myself in 1874-5 when I was surveying Otago. The nomenclature also has been carefully revised.

The list contains 268 species, of which 184 are confined to the Pareora System, 33 to the Oamaru System, and 51 are common to both. But of this latter number a few are doubtful. Evidently the two systems are closely related palæontologically, but they are separated stratigraphically by an unconformity which is almost always present. The Geological Survey divides the Pareora System into upper and lower miocene, the blue clay of Wanganui being included in the upper division. But I have elsewhere shewn that this blue clay belongs to the Wanganui System (1), and, this being removed, I cannot detect any palæontological break in the system. No doubt there is a considerable difference between the fossils of the upper and the lower beds, but deposition appears to have been continuous during the whole time and I cannot make out any distinct line of separation.

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(1) Trans. N.Z. Institute, Vol. 18. The Wanganui System.

Also no stratigraphical break has, as yet been proved between any parts of the Pareora System.

Dr. Hector certainly remarks in his Progress Report for 1877-8 (p. IV.), that Mr. McKay had found the "Wairarapa Limestone and underlying Taueru clays . . . . . . to rest uncomformably on the Taipo beds," and Mr. McKay himself says, "I consider that there is sufficient evidence to prove unconformity between these beds and the Taipos, which I shall adduce when describing those rocks," (l.c., p. 20). But he never does adduce this evidence.

The stratigraphical position of the fossils from Kakahu is uncertain. The beds containing them appear to dip under limestones belonging to the Oamaru System, but the section does not prove this absolutely and it is quite possible that the fossiliferous beds may have been thrown down by a fault. The fossils themselves are mostly Pareora forms, but a few are not known elsewhere. Under these circumstances I have admitted them into the list as belonging to the Oamaru System but with a note of interrogation.

CEPHALOPODA.

ATURIA ZICZAC, Sowb. var AUSTRALIS McCoy, Prod. Palæ. Victoria, Decade III., pl. 24.

Pareora System.—Waihao-forks; Hampden.
Oamaru System.—Kakanui; Weka-pass Stone; Waihemo.

GASTROPODA.

CYLICHNA STRIATA, Hutton, Cat. Marine Moll. of N.Z., p. 52.

Pareora System.—Awamoa; Pareora.

Found also in the Wanganui System.

CYLICHNA ENYSI, Hutton, Cat. Tertiary Moll. of N.Z., p. 16.
Oamaru System.—Trelissick Basin.

TORNATELLA OVALIS, Hutton, Trans. N.Z. Institute, XVII., p. 325.
Pareora System.—White-rock River.

VOLVULA REFLEXA, Hutton, Trans. N.Z. Inst., XVIII.
Pareora System. —White-rock River.

TYPHIS HEBETATUS, Hutton, Trans. N.Z. Inst. IX., p. 594, pl. 16, f. 1.
Pareora System.—Mt. Harris; Mt. Horrible; Awamoa.

MUREX NEOZELANICUS, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 529, pl. 36, f. 5-7.
Pareora System.—Mt. Harris.

Found also in the Wanganui System.

PURPURA TEXTILIOSA, Lamarck, Anim. sans Vert. 2nd ed., Vol. X., p. 77, No. 24.
Pareora System.—Cape Rodney; Trelissick Basin; Greta, N. Canterbury.

PURPURA CONOIDEA, Zittel, Reise der Novara, Geol. ii., p. 37, pl. 15, f. 5.
Pareora System.—Awatere.

I have not seen this species unless it is *Siphonalia nodosa* var. *conoidea*, in which case Zittel's figure is not good.

FUSUS AUSTRALIS, Quoy and Gaimard, Voy. Astrolobe, Zool. ii., p. 495, pl. 34, f. 9-14.
Pareora System—Greta, N. Canterbury; Hampden.

Found also in the Wanganui System.

FUSUS SPIRALIS, Adams, Pro. Zool. Soc. of London, 1855, p. 221.
Pareora System.—Awatere; Greta; Awamoa.

Found also in the Wanganui System.

FUSUS DENTATUS, Hutton, Trans. N.Z. Institute, IX., p. 594.
Pareora System.—Mt. Harris; White-rock River.

Perhaps a variety of the last with longitudinal ribs.

FUSUS TEGENS, Hutton, Trans. N.Z. Institute, IX., p. 594.
Pareora System.—White-rock River.

PERISTERNIA BREVIRÓSTRIS, Hutton, Trans. N.Z. Inst., IX., p. 596, pl. 16, f. 10 (Turbinella).
Pareora System.—Pareora ; White-rock River.

PERISTERNIA CINCTA, Hutton, Trans. N.Z. Inst, XVII., p. 327 (Clathurella); *C. rudis*, Hutton, l. c., p. 328.
Pareora System.—White-Rock River; Otaio; Waihao-forks.

SIPHONALIA MANDARINA, Duclos, Mag. Zool., Vol. VIII.; *Fusus Zealandicus*, Q. and G.
Pareora System.—Greta ; Waikari ; Trelissick; White-rock River; Awamoa.

Found also in the Wanganui System.

Var. CAUDATA, Quoy and Gaimard, l. c., Zool. ii., p. 503, pl. 34, f. 20-21.
Pareora System—Callaghan's Creek, Westland.

SIPHONALIA DILATATA, Quoy and Gaimard, l. c., Zool. ii., p. 498, pl. 34, f. 15-16. *Fusus subreflexus*, Sowb. in Darwin's Geol. Obs. in S. America, p. 259, pl. 4, f. 57.
Pareora System.—Upoko-Ngaruru, E. Coast of Wellington; Awatere; Greta ; Pareora.
Oamaru System (?)—Kakahu.

Found also in the Wanganui System.

Var. CRAWFORDI, Hutton, Cat. Tertiary Moll. of N.Z., p. 3.
Pareora System.—Teawaite, E. Coast of Wellington.

SIPHONALIA PLICATILIS, Hutton. Cat. Tertiary Moll. of N.Z., p. 3.
Pareora System.—Tapanui, Otago.

SIPHONALIA ORBITA, Hutton, Trans. N.Z. Institute, XVII., p. 326.
Pareora System.—Greta, N. Canterbury.

Perhaps the same as the last species.

SIPHONALIA NODOSA, Martyn, Univ. Conch. Buccinum, pl. 5.
Pareora System.—Waihao-forks ; Callaghan's Creek, Westland (?) ; Hampden.

Found also in the Wanganui System.

Var. CONOIDEA, Hutton, *F. nodosus*, var. D, Cat. Tertiary Moll. of N.Z.

Pareora System.—Awatere ; Waikari ; Kanieri ; New River, Greytown ; Hampden.

Found also in the Wanganui System.

SIPHONALIA SUBNODOSA, Hutton, Trans. N.Z. Inst., IX., p. 596, pl. 16, f. 7. (Cominella) ; *F. nodosus*, var. C, Cat. Tertiary Mollusca of N.Z.

Pareora System.—Waikari ; White-rock River ; Awamoa ; Hampden.

Found also in the Wanganui System.

SIPHONALIA COSTATA, Hutton, Trans. N.Z. Institute, IX., p. 594, pl. 16, f. 2.

Pareora System.—Mt. Harris ; White-rock River ; Pareora ; Mt. Horrible ; Matakuhi, Bay of Islands.

SIPHONALIA REGULARIS, Sowerby, in Darwin's Geol. Obs. in S. America, p. 258, pl. 4, f. 55.

Pareora System.—Awamoa.

PISANIA LINEATA, Martyn, Univ. Conch. Buccinum, pl. 48.

Pareora System.—Greta, N. Canterbury ; Pareora.

Found also in the Wanganui System.

PISANIA MEDIA, Hutton, Trans. N.Z. Institute, XVII., p. 326.

Pareora System.—Waikari ; Pareora ; White-rock River.

COMINELLA MACULATA, Martyn, Univ. Conch. Buccinum, pl. 49.

Pareora System.—Trelissick Basin ; White-rock River.

Found also in the Wanganui System.

COMINELLA INFLATA, Hutton, Cat. Tertiary Moll. of N. Z., p. 6 (Buccinum).

Pareora System.—Kanieri ; Mt. Horrible, Timaru.

COMINELLA CARINATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 6 (Buccinum).

Pareora System.—Trelissick Basin.

COMINELLA ROBINSONI, Zittel, Reise der Novara, Geol. ii., p. 36, pl. 13, f. 4.

Pareora System.—Port Hills, Nelson.

I have not recognised this species. Perhaps it is a Siphonalia.

COMINELLA ORDINATIS, Hutton, Trans. N.Z. Institute, IX., p. 596, pl. 16, f. 8.

Pareora System.—White-rock River.

NASSA SOCIALIS, Hutton, Trans. N.Z. Inst., XVIII., *N. compta* Hutton, l.c., IX., p. 596, pl. 16, f. 9, [not of Adams.]

Pareora System.—White-rock River; Awamoa; Pareora; Hampden.

NASSA INCISA, Hutton, Trans. N. Z. Inst., XVII., p. 328 (Clathurella); *C. cingulata*, Hutton, l.c., p. 327.

Pareora System.—Te Aute, Hawke's Bay; Greta, N. Canterbury.

OLIVA NEOZELANICA, Hutton, Trans. N.Z. Institute, XVII., p. 314, pl. 18, f. 1.

Pareora System.—Greta, N. Canterbury; Trelissick Basin.

Found also in the Wanganui System.

ANCILLARIA AUSTRALIS, Sowb. Sp. Conch., 1830, pl. 7, f. 44-46.

Pareora System.—Waikari; Motunau; Mt. Horrible; Waihao-forks; Awamoa; Trelissick; Hampden.

Found also in the Wanganui System.

ANCILLARIA LATA, Hutton, Trans. N.Z. Institute, XVII., p. 325.

Pareora System.—White-rock River; Tengawai; Mt. Horrible.

Found also in the Wanganui System.

ANCILLARIA HEBERA, Hutton, Cat. Tertiary Moll. of N.Z., p. 6.

Pareora System.—Greta; Pareora; White-rock River; Mt. Horrible; Otaio; Waihao-forks; Awamoa; Matakuhi, Bay of Islands.

Oamaru System.—Trelissick Basin.

MARGINELLA AUSTRALIS, Hinds (?), Pro. Zool. Soc. of London, 1844, p. 75.
Pareora System.—Awamoa; Mt. Royal, Otago.

MARGINELLA DUBIA, Hutton, Cat. Tertiary Moll. of N.Z , p. 8.
Oamaru System. – Trelissick Basin.

MARGINELLA VENTRICOSA, Hutton, Cat. Tertiary Moll. of N.Z., p. 8.
Oamaru System.—Trelissick Basin.

VOLVARIA FICOIDES, Hutton, Cat. Tertiary Moll. of N.Z., p. 8.
Pareora System (?)—Oamaru.

VOLUTA PACIFICA, Solander, Cat. Portland Museum, No. 4039.
Pareora System.—Awatere; Waikari; Lower Gorge of the Waipara; Mt. Harris; Pareora; Trelissick; Hampden.
Found also in the Wanganui System.

Var. ELONGATA, Swainson, Exot. Conch., pl. 20-21.
Pareora System.—Waikari.
Oamaru System.—Waipara; Trelissick; Maerawhenua; Oamaru; Waihemo; Caversham.
Found also in the Wanganui System.

VOLUTA GRACILIS, Swainson, Exot. Conch., pl. 42-43.
Pareora System.—Awatere; Waikari; Mt. Harris; Kanieri; Trelissick.
Found also in the Wanganui System.

VOLUTA ATTENUATA, Hutton, Quar. Jour. Geol. Soc. of London, Vol. 41, p. 555.
Pareora System.—Pareora.
Oamaru System.—Weka-pass; Trelissick Basin.

VOLUTA KIRKII, Hutton, Trans. N.Z. Institute, XVII., p. 325.
Pareora System.—Trelissick Basin.
Oamaru System (?)—Kakahu.

VOLUTA GRACILICOSTATA, Zittel, Reise der Novara, Geol. ii., p. 38, pl. 13, f. 6.
Pareora System.—Port Hills, Nelson.
I have not seen this species.

VOLUTA CORRUGATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 7.

Pareora System.—Maunga-pakeha Taipo, E. Coast of Wellington; Awatere; Waikari; Mt. Horrible; Pareora; Waihao-forks; Mt. Harris; Kanieri; Hampden; Lake Wakatipu.

VOLUTA ACULEATA, Hutton, Trans. N.Z. Institute, XVII., p. 325.

Pareora System.—White-rock River.

MITRA APICALIS, Hutton, Cat. Tertiary Moll. of N.Z., p. 7.

Pareora System.—Pareora; Awamoa.

MITRA ENYSI, Hutton, Cat. Tertiary Moll. of N.Z., p. 7.

Pareora System.—Pareora.

Oamaru System.—Trelissick Basin.

MITRA INCONSPICUA, Hutton, Trans. N.Z. Inst. XVII., p. 326.

Pareora System.—Mt. Harris; Waihao-forks.

CONUS TRAILLI, Hutton, Cat. Tertiary Moll. of N.Z., p. 10.

Pareora System.—Trelissick; Point Hill, Waitaki; Awamoa.

CONUS ORNATUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 10.

Pareora System.—Pareora; Point Hill, Waikati; Awamoa.

TEREBRA NITIDA, Hinds (?), Pro. Zool. Soc. of London, 1843, p. 152.

Pareora System.—Pareora; White-rock River.

TEREBRA COSTATA, Hutton, Trans. N.Z. Institute, XVII., p. 315, pl. 18, f. 6.

Pareora System.—Awamoa Otaio.

Found also in the Wanganui System.

TEREBRA BIPLEX, Hutton, Trans. N.Z. Inst. XVII., p. 327.

Pareora System.—Pareora.

PLEUROTOMA PAGODA, Hutton, Cat. Tertiary Moll. of N.Z., p. 5.

Pareora System.—Otaio; Mt. Harris; Awamoa.

Found also in the Wanganui System.

PLEUROTOMA ALBULA, Hutton, Cat. Marine Moll. of N.Z., p. 12.

Pareora System.—White-rock River; Awamoa.

Found also in the Wanganui System.

PLEUROTOMA EXCAVATA, Hutton, Trans. N.Z. Institute, IX., p. 595, pl. 16, f. 6.

Pareora System.—White-rock River.

Perhaps a variety of the last.

PLEUROTOMA FUSIFORMIS, Hutton, Trans. N.Z. Institute, IX., p. 595, pl. 16, f. 3.

Pareora System.—Waikari; Mt. Horrible; Pareora; Otaio; Mt. Harris; Waihao-forks; Awamoa; Hampden.

PLEUROTOMA BUCHANANI, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.

Pareora System.—White-rock River; Waihao-forks; Awamoa; Hampden.

Found also in the Wanganui System.

PLEUROTOMA AWAMOAENSIS, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.

Pareora System —Putiki Point, Kaipara; White-rock River; Mt. Harris; Waihao-forks; Awamoa.

PLEUROTOMA SULCATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.

Pareora System.—Cape Rodney; Waikari; Trelissick; Mt. Harris.

PLEUROTOMA ROBUSTA, Hutton, Trans. N.Z. Inst., IX., p. 595, pl. 16, f. 4.

Pareora System.—Matakuhi, Bay of Islands; Mt. Horrible; White-rock River.

PLEUROTOMA HAASTI, Hutton, Trans. N.Z. Inst., IX., p. 595, pl. 16, f. 5.

Pareora System.—Mt. Horrible; Pareora; White-rock River; Mt. Harris.

PLEUROTOMA HEBES, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.

Oamaru System.—Cape Oamaru; Poverty Bay.

PLEUROTOMA LATESCENS, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.

Oamaru System.—Mt. Brown, Waipara.

DRILLIA WANGANUIENSIS, Hutton, Cat. Tertiary Moll. of N.Z., p. 4.
Pareora System.—Greta, N. Canterbury; White-rock River.
Found also in the Wanganui System.

DAPHNELLA STRIATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 5. (Bela).
Pareora System.—Awamoa.
Found also in the Wanganui System.

CLATHURELLA HAMILTONI, Hutton, Trans. N.Z. Inst., XVII., p. 316, pl. 18, f. 7.
Pareora System.—Trelissick Basin; Waihao-forks.
Found also in the Wanganui System.

CLATHURELLA LEPTOSOMA, Hutton, Trans. N.Z. Inst., XVII., p. 328.
Pareora System.—White-rock River.

TRITON SPENGLERI, Lamarck, Anim. sans Vert., 2nd ed., IX., p. 627.
Pareora System.—Awamoa; Hampden.
Found also in the Wanganui System.

TRITON MINIMUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 5 (1873).
Pareora System.—Trelissick; White-rock River; Awamoa.
Oamaru System.—Trelissick.

CASSIDARIA SULCATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 8.
Pareora System.—Waikari; Pareora; Kanieri.

CASSIDARIA SENEX, Hutton, Cat. Tertiary Moll. of N.Z., p. 11, (Struthiolaria).
Pareora System.—Pareora; Oamaru (?).
Oamaru System.—Weka-pass; Oamaru; Caversham.
Much like *Cassis Coronadoi* (Crosse), from Cuba.

NATICA NEOZELANICA, Quoy and Gaimard, l.c., Zool. ii., p. 237, pl. 66, f. 11-12.
Pareora System.—Mt. Caverhill; Greta; Pareora; White-rock River; Hampden; Wangaloa.
Found also in the Wanganui System.

NATICA DARWINII, Hutton, Trans. N.Z. Inst., XVIII.,
N. solida, Sowb. [not of Blainville.]
Pareora System.—Awatere; Trelissick; Fox's Gully, Arahura.

NATICA GIBBOSA, Hutton, Trans. N.Z. Inst., XVIII.

Pareora System.—Conway River; Hurinui Mound; Lower Gorge of Waipara; Trelissick; Mt. Horrible; Pareora; White-rock River; Waihao-forks.

Oamaru System.—Curiosity Shop (?); Kakahu (?).

Found also in the Wanganui System.

NATICA CALLOSA, Hutton, Cat. Tertiary Moll. of N.Z., p. 9.

Pareora System.—East Coast of Wellington.

NATICA OVATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 9.

Pareora System.—Lyndon; Waikari; Motunau; Trelissick; Mt. Horrible; Pareora; White-rock River; Kanieri; Callaghan's Creek, Westland; Awamoa; Pourakino, Southland.

Oamaru System.—Trelissick Basin; Oamaru (?)

Found also in the Wanganui System.

NATICA HAMILTONI, Tate (?), Trans. Phil. Soc. of Adelaide.

Pareora System.—Trelissick; Mt. Horrible; Pareora; White-rock River.

Oamaru System.—Trelissick.

NATICA SUTURALIS, Hutton, Trans. N.Z. Inst., IX, p. 597, pl. 16, f. 11.

Pareora System.—Matakuhi, Bay of Islands; Awatere; Waikari; Mt. Horrible; Waihao-forks; Awamoa; Hampden; Mt. Royal, Otago.

SIGARETUS SUBGLOBOSUS, Sowb. in Darwin's Geol. Obs. in S. America, p. 254, pl. 3, f. 36-37.

Pareora System.—Pareora; White-rock River; Awamoa.

SIGARETUS CARINATUS, Hutton, Trans. N.Z. Institute, IX., p. 597.

Pareora System.—White-rock River.

EULIMA ACICULATA (?), Pease, Pro. Zool. Soc. of London, 1860.

Pareora System.—White-rock River.

ODOSTOMIA RUGATA, Hutton; *O. plicata*, Hutton, Trans. N.Z. Inst., XVII., p. 319, [not of Montfort.]

Pareora System.—White-rock River.

Found also in the Wanganui System.

CERITHIUM CANCELLATUM, Hutton, Cat. Tertiary Moll. of N.Z., p. 12.

Pareora System.—Hampden.

Found also in the Wanganui System.

CERITHIUM NODOSUM, Hutton; *C. nodulosum*, Hutton, Cat. Tertiary Moll. of N.Z. [not of Brug.]

Pareora System.—Trelissick; Mt. Horrible; Pareora; White-rock River; Waimea, Westland.

CERITHIUM RUGATUM, Hutton, Cat. Tertiary Moll. of N.Z., p. 11.

Pareora System.—Waikari; Tapanui, Otago.

MELANOPSIS POMAHAKA, Hutton, Cat. Tertiary Moll. of N.Z., p. 6 (Ancillaria).

Pareora System.—Tapanui, Otago.

STRUTHIOLARIA FRAZERI, Hutton, Trans. N.Z. Institute, XVII., p. 329.

Pareora System.—Motunau.

Found also in the Wanganui System.

STRUTHIOLARIA CINCTA, Hutton, Cat. Tertiary Moll. of N.Z., p. 11.

Pareora System.—Upper Mohaka, Hawke's Bay; Awatere; Motunau, Greta; Waikari; Lower Gorge of Waipara; Opihi; Pareora; Kanieri; Callaghan's Creek, Westland.

Oamaru System (?)—Kakahu.

STRUTHIOLARIA CALCAR, Hutton, Trans. N.Z. Institute, XVIII.

Pareora System.—Tengawai; Awamoa.

STRUTHIOLARIA TUBERCULATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 11.

Pareora System.—Upper Mohaka, Hawke's Bay; Waikari; Lower Gorge of Waipara; Mt. Horrible; Pareora; White-rock River.

STRUTHIOLARIA SPINOSA, Hutton, Trans. N.Z. Institute, XVIII.

Pareora System.—Kawau; East-Coast of Wellington; Trelissick; Pareora; Upukororo Creek, Lake Te Anau; Purakino, Southland.

STRUTHIOLARIA VERMIS, Martyn, Univ. Conch., pl. 53.

Pareora System.—Awatere; Motunau; Awamoa.

Found also in the Wanganui System.

STRUTHIOLARIA CINGULATA, Zittel, Reise der Novara, Geol. ii., p. 35, pl. 15, f. 2.

Pareora System.—Awatere; Motunau; Mt. Harris.

Found also in the Wanganui System.

STRUTHIOLARIA OBESA, Hutton, Trans. N. Z. Institute, XVII., p. 329.

Pareora System.—Trelissick; Shepherd's Hutt, Waipara.

STRUTHIOLARIA SULCATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 10; *S. canaliculata*, Zittel, Reise der Novara, Geol. ii., p. 34, pl. 15, f. 1 [not of Spengl].

Pareora System.—Upper Mohaka, Hawke's Bay; East Coast of Wellington; Awatere.

TROCHITA NEOZELANICA, Lesson, Voy. Coquille, Zool. ii., p. 395.

Pareora System.—Napier; Greta; Motunau; Trelissick; Pareora; Awamoa; Hampden.

Oamaru System.—Trelissick.

Found also in the Wanganui System.

TROCHITA DILATATA, Sowb. (?); Zittel, Reise der Novara, Geol. ii., p. 43, pl. 15, f. 8.

Pareora System.--Awatere; Lyndon; Mt. Cookson; Waikari; Lower Gorge of Waipara; Point Hill, Waitaki.

TROCHITA ALTA, Hutton, Trans. N.Z. Institute, XVII., p. 329.

Pareora System.—White-rock River.

Found also in the Wanganui System.

CREPIDULA COSTATA, Sowb. Genera of Shells, f. 3.

Pareora System.—Trelissick.

Found also in the Wanganui System.

CREPIDULA STRIATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 14; Zittel, l. c., pl. 15, f. 10.

Pareora System.—Awatere; Trelissick; Oamaru.

CREPIDULA MONOXYLA, Lesson, Voy. Coquille, Zool. ii., p. 391.

Pareora System.—Napier; Paparoa, Upper Wanganui; Awatere; Motunau; Trelissick; White-rock River; Awamoa; Hampden.

Found also in the Wanganui System.

CREPIDULA INCURVA, Zittel, Reise der Novara, Geol. ii., p. 44, pl. 15, f. 9.

Pareora System.—Napier; Awatere; Motunau; Lyndon; Waikari; Lower Gorge of Waipara; Trelissick; Pareora; Awamoa.

CREPIDULA UNGUIFORMIS, Lamarck, Anim. sans Vert., 2nd ed. VIII., p. 642.

Pareora System.—Awamoa.

Found also in the Wanganui System.

HIPPONYX RADIATUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 14, (Pileopsis.)

Pareora System.—Awatere.

TURRITELLA GIGANTEA, Hutton, Cat. Tertiary Moll. of N.Z., p. 12.

Pareora System.—Lower Gorge of Waipara; Trelissick; Pareora; Pourakino, Southland.

Oamaru System.—Caversham.

TURRITELLA CONCAVA, Hutton, Trans. N.Z. Institute, IX., p. 597.

Pareora System.—Matakuhi, Bay of Islands; White-rock River; Mt. Horrible; Pareora; Point Hill, Waitaki.

TURRITELLA PATAGONICA, Sowb. in Darwin's Geol. Obs. in S. America, p. 256, pl. 3, f. 48; *T. tricincta* var. *β*, Cat. Tertiary Moll. of N.Z.

Pareora System.—Mt. Cookson; White-rock River; Mt. Harris; Kanieri.

TURRITELLA ALDINGÆ, Tate, Trans. Phil. Soc. of Adelaide.

Pareora System.—Pareora; White-rock River; Mt. Harris; Awamoa; Westland.

TURRITELLA ROSEA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 136, pl. 55, f. 24-26.

Pareora System.—Cape Rodney; Kawau; Awatere; Mt. Cookson; Lyndon; Motunau; Greta; Mt. Caverhill; Trelissick; Tengawai; Mt. Harris; Hampden.

Found also in the Wanganui System.

TURRITELLA AMBULACRUM, Sowerby, in Darwin's Geol. Obs. in S. America, p. 257, pl. 3, f. 49; *T. bicincta*, Hutton, Cat. Tertiary Moll. of N.Z.

Pareora System.—Awatere; Kanieri; Hampden.

Oamaru System (?).—Kakahu.

Found also in the Wanganui System.

TURRITELLA TRICINCTA, Hutton, Cat. Tertiary Moll. of N.Z., p. 13; *T. rosea*, Mantell, Quar. Jour. Geol. Soc., Vol. VI., pl. 28, f. 16 [not of Quoy].

Pareora System.—Awatere; Mt. Cookson; Waikari; Trelissick; Awamoa; Hampden.

Found also in the Wanganui System.

TURRITELLA ORNATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 13.

Pareora System.—Hampden; Tapanui, Otago.

EGLISIA STRIOLATA, Hutton, Trans. N.Z. Institute, XVII., p. 329.

Pareora System.—White-rock River.

VERMETUS MONILIFERUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 13.

Pareora System.—Trelissick.

Found also in the Wanganui System.

XENOPHORA CONCHYLIOPHORA, Born.

Pareora System.—Awamoa.

Found also in the Wanganui System.

SCALARIA MARGINATA, Hutton, Trans. N.Z. Institute, XVII., p. 330.

Oamaru System.—Curiosity Shop.

SCALARIA LYRATA, Zittel, Reise der Novara, Geol. ii., p. 41, f. 18.

Pareora System.—Kawau.

Oamaru System.—Port Waikato; Aotea; Kaipuki; Weka-pass; Curiosity Shop; Opihi; Oamaru.

SCALARIA BROWNII, Zittel, Reise der Novara, Geol. ii., p. 42, pl. 9, f. 2.

Pareora System.—White-rock River.

Oamaru System.—Aotea; Brighton, Westland; Opihi.

Probably a variety of the last species.

SCALARIA ROTUNDA, Hutton, Cat. Tertiary Moll. of N.Z., p. 10.

Oamaru System.—Weka-pass; Brighton, Westland.

SCALARIA ZELEBORI, Frauenfeld, Reise der Novara, Moll., pl. 1, f. 6.

Pareora System.—White-rock River.

Found also in the Wanganui System.

NERITOPSIS sp., Zittel, Reise der Novara, Geol. ii., p. 43, pl. 9, f. 4.

Oamaru System.—Papakura, Auckland.

TURBO SUPERBUS, Zittel, Reise der Novara, Geol. ii., p. 39, pl. 14, f. 2.

Pareora System.—Cape Rodney; Kawau; Hurinui Mound; Trelissick; Mt. Horrible.

ROTELLA NEOZELANICA, Homb. and Jacq. Voy. Pole Sud., Zool. V., p. 53, pl. 14, f. 5-6.

Pareora System.—Waikari; Motunau.

Found also in the Wanganui System.

TROCHUS CIRCINATUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 15.

Pareora System.—Awatere; New River, Greymouth.

TROCHUS NODOSUS, Hutton, Trans. N.Z. Institute, XVII., p. 330.

Oamaru System.—Trelissick Basin.

ZIZYPHINUS PUNCTULATUS, Martyn, Univ. Conch., pl. 37.

Pareora System.—Mt. Caverhill; Weka Creek, Weka Pass.

Found also in the Wanganui System.

ZIZYPHINUS SPECTABILIS, Adams, Pro. Zool. Soc. London, 1854, p. 37, pl. 27, f. 7.

Oamaru System.—Trelissick.

A living species not yet found higher.

CANTHARIDUS TENEBROSUS, Adams, Pro. Zool. Soc. London, 1851, p. 170.

Pareora System.—Awatere; Trelissick.

Oamaru System.—Pahau; Trelissick.

Found also in the Wanganui System.

MONILEA STOLICZKAI, Zittel, Reise der Novara, Geol. ii., p. 40, pl. 15, f. 7. (Trochus).

Pareora System.—Awatere; White-rock River; Awamoa.

CYCLOSTREMA (?) HELICOIDES, Hutton, Trans. N.Z. Institute, IX., p. 598.

Pareora System.—White-rock River.

PLEUROTOMARIA TERTIARA, McCoy, Prod. Palæ. Victoria, Decade 3, pl. 25, f. 1.

Oamaru System.—Weka-pass; Mt. Somers building stone; Oamaru.

HALIOTIS IRIS, Martyn, Univ. Conch., pl. 61.

Pareora System—Cape Rodney.

A living species not yet found in the Wanganui System.

EMARGINULA STRIATULA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 332, pl. 68, f. 21-22.

Pareora System.—Awamoa.

Found also in the Wanganui System.

SCAPHOPODA.

DENTALIUM GIGANTEUM, Sowb. in Darwin's Geol. Obs. in S. America, p. 263, pl. 2, f. 1; *D. solidum*, Hutton, Cat. Tertiary Moll. of N. Z., p. 2.

Pareora System.—Awatere (?); Sherry River; Waikari; Trelissick; White-rock River; Pareora; Mt. Harris; Lake Wakatipu.

Oamaru System.—Weka-pass; Otakaika, Waitaki; Castle Rock, Southland.

DENTALIUM CONICUM, Hutton, Cat. Tertiary Moll. of N. Z , p. 1.

Pareora System.—Waikari; Trelissick.

Found also in the Wanganui System.

DENTALIUM MANTELLI, Zittel, Reise der Novara, Geol. ii., p. 45, pl. 13, f. 7; *D. irregulare*, Hutton, Cat. Tertiary Moll. of N. Z., p. 1.

Pareora System.—Port Hills, Nelson; Awatere; Motunau; Mt. Caverhill; Mt. Horrible; Otaio; Pareora; Waihao-forks; Mt. Harris; Hampden; Kanieri.

Oamaru System.—Teschmakers, Oamaru (M'Kay).

DENTALIUM MAJUS, Sowerby, in Darwin's Geol. Obs. in S. America, p. 263, pl. 2, f. 3.

Pareora System.—Westland.

DENTALIUM LÆVE, Hutton, Cat. Tertiary Moll. of N. Z., p. 2.

Pareora System.—Motunau; Mt. Harris; Kanieri.

DENTALIUM TENUE, Hutton, Cat. Tertiary Moll. of N. Z., p. 1.

Oamaru System.—Wangape Lake, Waikato; Raglan.

DENTALIUM ECOSTATUM, Kirk, Trans. N. Z. Institute, XIII., p. 306.

Pareora System.—Pareora.

Found also in the Wanganui System.

LAMELLIBRANCHIATA.

TEREDO HEAPHYI, Zittel, Reise der Novara, Geol. ii., p. 45, pl. 14, f. 4; *Cladopoda directa*, Hutton, Trans. N.Z. Institute, IX., p. 597, pl. 16, f. 13.

Pareora System.—Cape Rodney; Waihao-forks.

Oamaru System.—Curiosity Shop; Trelissick.

PANOPÆA NEOZELANICA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 547, pl. 83, f. 7-9.

Pareora System.—Napier; Motunau; Kanieri.

Found also in the Wanganui System.

PANOPÆA ORBITA, Hutton, Quar. Jour. Geol. Soc. London, Vol. 41, p. 551; *P. plicata* Hutton, Cat. Tertiary Moll. of N.Z., p. 17 [not of Sowerby].

Pareora System.—Greta; Pareora; Mt. Harris; Lake Wakatipu.

Oamaru System.—Raglan; Cape Farewell; Trelissick.

PANOPÆA WORTHINGTONI, Hutton, Cat. Tertiary Moll. of N.Z., p. 17.

Pareora System.—Mt. Harris; Lake Wakatipu.

Oamaru System.—Trelissick.

PANOPÆA sp., Zittel, Reise der Novara, Geol. ii., pl. 9, f. 2.

Oamaru System.—Aotea.

CORBULA CANALICULATA, Hutton; *C. sulcata*, Hutton, Trans. N.Z. Institute, IX., p. 598, pl. 16, f. 14 [not of Lamarck].

Pareora System.—Mt. Harris; White-rock River

CORBULA HUMEROSA, Hutton, Trans. N.Z. Institute, XVII., p. 330.

Pareora System.—White-rock River.

CORBULA PUMILA, Hutton, Trans. N.Z. Institute, XVII., p. 330.

Pareora System.—White-rock River.

CORBULA (?) DUBIA, Hutton, Cat. Tertiary Moll. of N.Z., p. 18.

Pareora System.—Awatere; Motunau; Mt. Cookson; Greta; Awamoa; New River, Greymouth.

NEÆRA KIRKI, Hutton, Cat. Tertiary Moll. of N.Z., p. 18.

Oamaru System.—Wangape Lake, Waikato.

MYODORA SUBROSTRATA, Smith, Pro. Zool. Soc. London, 1880, p. 584, pl. 53, f. 6.

Pareora System.—Awamoa.

Found also in the Wanganui System.

PHOLADOMYA NEOZELANICA, Hutton, Trans. N.Z. Inst., XVII., p. 330.

Oamaru System.—Trelissick.

MACTRA DISCORS, Gray, Mag. Nat. Hist., 1837, p. 371.

Pareora System.—Napier; Lower Gorge of Waipara; Trelissick; Pareora; White-rock River.

Found also in the Wanganui System.

HEMIMACTRA ELONGATA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 518, pl. 83, f. 1-2.

Pareora System.—Napier; Awatere; Motunau; Lower Gorge of Waipara.

LUTRARIA SOLIDA, Hutton, Cat. Tertiary Moll. of N.Z., p. 19.

Pareora System.—Napier; Lower Gorge of Waipara.

Found also in the Wanganui System.

LUTRARIA SULCATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 19.

Pareora System.—Awatere; Motunau.

CÆCELLA NEOZELANICA, Deshayes, Pro. Zool. Soc. London, 1854, p. 335; *Darina pusilla,* Hutton, Cat. Marine Moll. of N.Z., p. 64.

Pareora System.—White-rock River.

Found also in the Wanganui System.

ZENATIA ACINACES, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 545, pl. 83, f. 5-6.

Pareora System.—Pareora; Awamoa.

Found also in the Wanganui System.

PAPHIA NEOZELANICA, Chemnitz, Conch. Cab. VI., f. 19-20, (Mya).
Pareora System.—Napier.
Found also in the Wanganui System.

PAPHIA ATTENUATA.—Hutton, Cat. Tertiary Moll. of N.Z., p. 18, (Mactra).
Oamaru System.—Trelissick.

PAPHIA (?) GRANDIS, Hutton, Cat. Tertiary Moll. of N.Z., p. 20.
Pareora System.—East coast of Wellington.

PSAMMOBIA STANGERI, Gray, in Dieffenbach's New Zealand, ii., p. 253.
Pareora System.—Motunau; Awamoa.
Found also in the Wanganui System.

PSAMMOBIA LINEOLATA, Gray, in Yate's New Zealand, p. 309.
Pareora System.—Motunau; Pareora; Point Hill, Waitaki.
Found also in the Wanganui System.

HIATULA INCERTA, Reeve, Conch. Icon. (Soletellina), f. 13.
Pareora System.—Awatere; Pareora.
Found also in the Wanganui System.

TELLINA ALBA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., pl. 81, f. 1-3.
Pareora System.—Awamoa.
Found also in the Wanganui System.

VENUS OBLONGA, Hanley, in Wood's Index Test. Supp.
Pareora System.—Castle Point, Wellington; Waikari; Awamoa.
Found also in the Wanganui System.

VENUS MERIDIONALIS, Sowb. in Darwin's Geol. Obs. in S. America, p. 250, pl. 2, f. 13; *V. vellicata,* Hutton, Cat. Tertiary Moll. of N.Z.
Pareora System.—White Cliffs, Taranaki; Castle Hill, Wellington; Awatere; Motunau; Mt. Caverhill; Mt. Cookson; Lyndon; Waikari; White-rock River; Awamoa; Tapanui, Otago.
Found also in the Wanganui System.

VENUS STUTCHBURYI, Gray, in Wood's Index Test. Supp.
Pareora System.—Napier; Pareora; Hampden.
Found also in the Wanganui System.

VENUS SULCATA, Hutton, Trans. N.Z. Institute, VII., p. 458, and fig.
Pareora System.—Napier; Motunau.
Found also in the Wanganui System.

VENUS MESODESMA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 532, pl. 84, f. 17-18.
Pareora System.—Awamoa.
Found also in the Wanganui System.

CYTHEREA ENYSI, Hutton, Cat. Tertiary Moll. of N.Z., p. 21.
Pareora System.—Lower Gorge of Waipara; Trelissick.

CYTHEREA (CALLISTA) ACCUMINATA, Hutton, Cat. Tertiary Moll. of N.Z. (Chione).
Pareora System.—Pareora; Tapanui, Otago.

CYTHEREA (CALLISTA) ASSIMILIS, Hutton, Cat. Tertiary Moll. of N.Z., p. 21 (Chione).
Pareora System.—Trelissick; Pareora; Otaio.
Found also in the Wanganui System.

CYTHEREA (CALLISTA) ELEGANS, Hutton, Cat. Tertiary Moll. of N.Z., p. 21.
Pareora System.—Clent Hills Station; Pareora; Kanieri.

CYTHEREA (CALLISTA) MULTISTRIATA, Sowb. Thes. Conch., i., p. 628, pl. 36, f. 177.
Pareora System.—Motunau; Greta; Hampden.
Found also in the Wanganui System.

DOSINEA MAGNA, Hutton, Cat. Tertiary Moll. of N.Z., p. 22.
Pareora System.—Trelissick; Pareora; Tengawai.
Oamaru System (?).—Kakahu.

DOSINEA SUBROSEA, Gray, in Dieffenbach's New Zealand, ii., p. 249; *D. dispar* Hutton, Cat. Tertiary Moll. of N.Z., p. 22.
Pareora System.—Napier; Castle Point, Wellington; Cape Rodney; Kawau; Awatere; Motunau; Lower Gorge of Waipara; Trelissick; Pareora; Awamoa.
Found also in the Wanganui System.

DOSINEA GRAYI, Zittel, Reise der Novara, Geol. ii., p. 45, pl. 15, f. 11.
Pareora System. — Awatere; Motunau; Greta; Lower Gorge of Waipara; Pareora; Mt. Harris.
Found also in the Wanganui System.

DOSINEA LIMBATA, Gould, Pro. Boston Nat. Hist. Soc., iii., p. 277.
Pareora System.—Greta; Pareora.
Found also in the Wanganui System.

TAPES INTERMEDIA, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 526, pl. 84, f. 9-10.
Pareora System.—Awatere; Montunau; Awamoa.
Found also in the Wanganui System.

TAPES CURTA, Hutton, Cat. Tertiary Moll. of N.Z., p. 22.
Pareora System.—Upper Mohaka, Hawke's Bay; Waikari; Trelissick; Pareora.

CARDIUM SPATIOSUM, Hutton, Cat. Tertiary Moll. of N.Z., p 23.
Pareora System.—Cape Rodney; East coast of Wellington; Waitotara; Trelissick.

CARDIUM MULTIRADIATUM, Sowb. in Darwin's Geol. Obs. in S. America, p. 251, pl. 2, f. 16.
Pareora System.—Lower Gorge of Waipara.

CARDIUM GREYI, Hutton, Cat. Tertiary Moll. of N.Z., p. 23.
Pareora System.—Kawau.

CARDIUM PATULUM, Hutton, Cat. Tertiary Moll. of N.Z., p. 23.
Pareora System.—Waihao-forks.
Oamaru System.—The Deans, Waipara; Trelissick.

CARDIUM STRIATULUM, Sowerby, Pro. Zool. Soc. London, 1840.
Pareora System.—White Cliffs, Taranaki.
Found also in the Wanganui System.

CARDIUM (PROTOCARDIUM) SERUM, Hutton, Cat. Tertiary Moll. of N.Z., p. 23.
Oamaru System.—Trelissick.

CHAMA HUTTONI, Hector, MSS.
Pareora System.—Castle Point, Wellington.

CHAMOSTRÆA ALBIDA, Lamarck, Anim. sans Vert., 2nd ed., VI., p. 585.
Pareora System.—Trelissick.
Found also in the Wanganui System.

LUCINA DENTATA, Wood, Gen. Conch., p. 195, pl. 46, f. 7.
Pareora System.—Waikari; Pareora; Awamoa.
Oamaru System.—Trelissick.
Found also in the Wanganui System.

LORIPES LAMINATA, Hutton, Trans. N. Z. Institute, XVII., p. 331.
Pareora System.—White-rock River.

LORIPES CONCINNA, Hutton, Trans. N. Z. Institute, XVII., p. 323.
Pareora System.—White-rock River.
Found also in the Wanganui System.

MYSIA NEOZELANICA, Gray, in Diffenbach's New Zealand, ii., p. 256.
Pareora System.—Awamoa.
Found also in the Wanganui System.

CRASSATELLA AMPLA, Zittel, Reise der Novara, Geol. ii., p. 46, pl. 14, f. 3.
Pareora System—Cape Rodney; Kawau; Trelissick.

CRASSATELLA OBESA, Adams, Pro. Zool. Soc. of London, 1852, p. 90, pl. 16, f. 2; *C. Trailli*, Hutton, Cat. Tertiary Moll. of N. Z.
Pareora System.—Mt. Horrible; Pareora; Mt. Harris; Awamoa.
A living species not yet found in the Wanganui System.

CRASSATELLA AUSTRALIS, Hutton, Cat. Tertiary Moll. of N. Z., p. 25 (Astarte). Perhaps the same as *C. Lyallii* Sowb. in Darwin's Geol. Obs. in S. America.

Oamaru System (?)—Kakahu.

CRASSATELLA ATTENUATA, Hutton, Cat. Tertiary Moll. of N. Z., p. 24, (Mactra).

Pareora System.—Point Hill, Waitaki.
Oamaru System.—Trelissick.

CARDITA AUSTRALIS, Lamarck, Anim. sans Vert., 2nd ed., VI. p. 383.

Pareora System.—Napier; Castle Point, Wellington; Mt. Caverhill; Mt. Harris.

Found also in the Wanganui System.

CARDITA DIFFICILIS, Deshayes, Pro. Zool. Soc. London, 1852, p. 103, pl. 17, f. 16-17; *Venericardia intermedia,* Hutton, Cat. Tertiary Moll. of N. Z.

Pareora System.—Castle Point, Wellington; Motunau; Lower Gorge of Waipara; Waikari; Hurinui Mound; Awamoa.

Found also in the Wanganui System.

CARDITA PATAGONICA, Sowb. in Darwin's Geol. Obs. in S America, p. 251, pl. 2, f. 17; *Venericardia intermedia* var β Hutton, Cat. Tertiary Moll. of N.Z.

Pareora System.—Matakuhi, Bay of Islands; Trelissick; Orari; Mt. Harris; Awamoa.
Oamaru System.—Trelissick; Kakahu.

Found also in the Wanganui System.

UNIO INFLATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 25.

Oamaru System.—Moreley Creek, Southland.

TRIGONIA SEMIUNDULATA, McCoy, Prod. Palæ. Victoria, Decade pl. 19, f, 4-5.

Pareora System.—Awamoa.

LEDA FASTIDIOSA, Adams, Pro. Zool. Soc. London, 1856, p. 49; *L. semiteres*, Hutton, Trans. N.Z. Institute, IX., p. 598.

Pareora System.—Waihao-forks.

Found also in the Wanganui System.

LEDA sp. ind. Zittel, Reise der Novara, Geol. ii., p. 47, pl. 15, f. 2.

Pareora System. Awatere.

SOLENELLA AUSTRALIS, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 471, pl. 78, f. 5-10; *Nucula ornata* Sowb. in Darwin's Geol. Obs. in S. America, p. 251, pl. 2, f. 19.

Pareora System.—Conway River.

Found also in the Wanganui System.

SOLENELLA FUNICULATA, Hutton; *S. australis*, Zittel, Reise der Novara, Geol. ii., p. 47, pl. 13, f. 2 [not of Quoy and Gaimard].

Pareora System.—White Cliffs, Taranaki; Port Hills, Nelson; Conway River; Waikari; Mt. Harris; Hampden.

The lamellæ are closer than in the last species.

ARCA DECUSSATA, Sowb., Pro. Zool. Soc. London, 1833, p. 8.

Pareora System.—Trelissick.

Oamaru System.—Trelissick.

Found also in the Wanganui System.

MACRODON AUSTRALIS, Hutton, Trans. N.Z. Institute, XVII., p. 331.

Pareora System.—White-rock River; Mt. Horrible; Pareora.

CUCULLÆA PONDEROSA, Hutton, Cat. Tertiary Moll. of N.Z., p. 27.

Pareora System.—Korakonui, East coast of Wellington; Waikari; Trelissick; Lake Wakatipu.

Oamaru System.—Wangarei; Kakahu.

CUCULLÆA WORTHINGTONI, Hutton, Cat. Tertiary Moll. of N.Z., p. 27.

Pareora System.—Waikari; Trelissick; Lake Wakatipu.

Oamaru System.—Otakaika, Waitaki; Kakahu.

CUCULLÆA ALTA, Sowb. in Darwin's Geol. Obs. in S. America, p. 252, pl. 2, f. 22-23.

Pareora System.—East Coast, Wellington; Lyndon; Waikari; Trelissick; Lake Wakatipu; Callaghan's Creek, Westland.

Oamaru System.—Raglan; Curiosity Shop; Kakahu; Otakaika, Waitaki; Kakanui; Kyeburn; Green Island; Tokomairiro.

CUCULLÆA ATTENUATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 28.

Pareora System.—Paparoa, Upper Wanganui: Lake Wakatipu.

Oamaru System.—Caversham.

CUCULLÆA SINGULARIS, Zittel, Reise der Novara, Geol. ii., p. 49, pl. 9, f. 10.

Oamaru System.—Aotea.

PECTUNCULUS LATICOSTATUS, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 466, pl. 77, f. 1-2.

Pareora System, Kawau; Napier; Castle Point, Wellington; Port Hills, Nelson; Awatere; Mt. Caverhill; Lyndon; Waikari; Motunau; Lower Gorge of Waipara; Trelissick; Callaghan's Creek, Westland; Hampden; Wangaloa, Otago.

Oamaru System.—Caversham.

Found also in the Wanganui System.

PECTUNCULUS GLOBOSUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 28.

Pareora System.—Kawau; Hicks Bay; Wairoa, Nelson; Waikari; Motunau; Trelissick; Pareora; White-rock River; Callaghan's Creek, Westland; Kanieri; Oamaru; Wangaloa, Otago.

Oamaru System (?)—Kakahu.

PECTUNCULUS (?) CORDATUS, Hutton, Cat. Tertiary Moll. of N.Z., p. 28.

Pareora System. — Wairoa, Nelson ; Greta ; Trelissick ; White-rock River.

LIMOPSIS AURITA, Brocchi, Conch. Foss. Subapen., pl. 11, f. 9 ; *L. zealandica*, Hutton, Cat. Tertiary Moll. of N.Z., p. 28.

Pareora System.—Pareora ; Otaio ; White-rock River ; Mt. Harris ; Awamoa.

Oamaru System.—Trelissick ; Kakahu ; Otakaika, Waitaki.

LIMOPSIS INSOLITA, Sowb. in Darwin's Geol. Obs. in S. America, p. 252, pl. 2, f. 20-21.

Pareora System.—Port Hills, Nelson ; Kanieri ; Waikari ; Pareora ; White-rock River ; Mt. Harris ; Hampden.

MYTILUS LATUS, Chemnitz (?), Conch. Cab., VIII., f. 747.

Pareora System.—Trelissick.

MYTILUS MAGELLANICUS, Lamarck, Anim. sans Vert., 2nd ed., VII., p. 37.

Pareora System.—Napier ; Hampden.

Found also in the Wanganui System.

MYTILUS STRIATUS, Hutton, Trans. N.Z. Institute, XVII., p, 332.

Oamaru System.—Trelissick.

MODIOLA AUSTRALIS, Gray, in King's Voyage, ii., p. 477.

Pareora System.—Napier; Mt. Caverhill; Waikari; Motunau ; Lower Gorge of Waipara ; Trelissick ; Opihi.

Found also in the Wanganui System.

CRENELLA ELONGATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 25.

Oamaru System.—Trelissick.

PERNA sp. ind. Hutton, Cat. Tertiary Moll. of N.Z., p. 26.

Pareora System.—Castle Point, Wellington.

Found also in the Wanganui System.

PINNA NEOZELANICA, Gray, in Dieffenbach's New Zealand, ii., p. 259.

Pareora System.—Awatere.
Oamaru System (?).—Kakahu.
Found also in the Wanganui System.

PINNA DISTANS, Hutton, Cat. Tertiary Moll. of N.Z., p. 26.
Oamaru System.—Curiosity Shop; Caversham, Dunedin.

LIMA LÆVIGATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Oamaru System. — Mt. Somers building stone; Opuha; Waihola Gorge, Otago.

LIMA CRASSA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Pareora System.—Lower Gorge of Waipara; Trelissick; Pareora.

LIMA PAUCISULCATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Oamaru System.—Cape Farewell; Kaipuke Cliffs; Caversham (?)

LIMA COLORATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Pareora System.—Mt. Horrible; Pareora; Awamoa.

LIMA PALÆATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Oamaru System.—Culverden; Curiosity Shop; Cave Creek, Mt. Somers; Coal Creek, Rangitata; Oamaru.

LIMA MULTIRADIATA, Hutton, Cat. Tertiary Moll. of N.Z., p. 33.
Oamaru System.—Curiosity Shop.

LIMA WOODSII, Tate, Trans. Phil. Soc. Adelaide.
Oamaru System.—Poverty Bay; Trelissick.

HINNITES TRAILLI, Hutton, Cat. Tertiary Moll. of N. Z., p. 32.
Pareora System.—Trelissick; Awamoa.

PECTEN ATHLETA, Zittel, Reise der Novara, Geol. ii., p. 49, pl. 10, f. 1.
Oamaru System.—Whangape Lake; Tata Island; Motupipi; Trelissick.

PECTEN TRIPHOOKI, Zittel, Reise der Novara, Geol. ii., p. 52, pl. 11, f. 4.

Pareora System.—Napier; Maunga-pakeha Taipo and Castle Point, Wellington; Waitotara; Lyndon; Waikari; Motunau.

PECTEN HUTCHINSONI, Hutton, Cat. Tertiary Moll. of N. Z., p. 31.

Pareora System.—Oamaru; Hampden.

Oamaru System.—Tata Island; Kaipuke; Takaka; Weka Pass; Trelissick; Kakanui.

PECTEN BEETHAMI, Hutton, Cat. Tertiary Moll. of N. Z., p. 31.

Pareora System.—Upoko-ngararu, Wellington.

Oamaru System.—White-rock Quarry, Ashley; Mt. Somers stone; Oamaru; Caversham.

PECTEN SECTUS, Hutton, Cat. Tertiary Moll. of N. Z., p. 30.

Pareora System.—Napier; Motunau; Kanieri; Callaghan's Creek, Westland.

PECTEN CRAWFORDI, Hutton, Cat. Tertiary Moll. of N. Z., p. 32.

Pareora System.—Maunga-pakeha Taipo, Wellington; Motanau (?).

Oamaru System.—Kakanui.

PECTEN SEMIPLICATUS, Hutton, Cat. Tertiary Moll. of N. Z., p. 30.

Pareora System.—Castle Point, Wellington.

Found also in the Wanganui System.

PECTEN DIFFLUXUS, Hutton, Cat. Tertiary Moll. of N. Z., p. 31.

P. delicatulus (l.c., p. 30), is the left valve of this species.

Pareora System.—Castle Point, Wellington; Weka Pass; Greta; Motunau.

PECTEN VENOSUS, Hutton, Cat. Tertiary Moll. of N. Z., p. 30.

Oamaru System (?)—Oamaru.

PECTEN NEOZELANICUS, Gray, in Dieffenbach's N. Z., ii., p. 260.

Pareora System.—Napier; Greta.

Found also in the Wanganui System.

PECTEN WILLIAMSONI, Zittel, Reise der Novara, Geol. ii., p. 50, pl. 9, f. 11.

Oamaru System.—Raglan; Aotea; Kaipuki; Tata Island; Blackbirch Creek, Nelson; Oxford Chalk; Curiosity Shop.

PECTEN SCANDULA, Hutton, Cat. Tertiary Moll. of N. Z., p. 29.

Pareora System.—Kanieri.

PECTEN FISCHERI, Zittel, Reise der Novara, Geol. ii., p. 53, pl. 9, f. 1-2.

Pareora System.—Orakei Bay, Auckland (?).

Oamaru System.— Papakura; Port Waikato; Weka Pass; Oamaru.

PECTEN YAHLENSIS, Tenison-Woods, Trans. Phil. Soc. Adelaide, 1865, pl. 1, f. 4; *S. Hectori* Hutton, Cat. Tertiary Moll. of N.Z., p. 30; *P. Hochstetteri* Zittel, l.c. pl. 11., f. 5 b.

Oamaru System.—Brighton, Westland; Trelissick; Kakanui.

PECTEN HOCHSTETTERI, Zittel, Reise der Novara, Geol. ii., p. 50, pl. 11., f. 5a.

Pareora System. — Mt. Cookson; Waikari; Motunau; Waihao; Hampden.

Oamaru System.—Wangarei; Raglan; Aotea; Cape Farewell; Kaipuke; Pt. Elizabeth, Greymouth; Blackbirch Creek, Nelson; Weka Pass; Trelissick; Curiosity Shop; Kakahu; Oamaru; Caversham; Waimea plains, Southland; Winton.

PECTEN AUCKLANDICUS, Zittel, Reise der Novara, Geol. ii., p. 53, pl. 9, f. 1a.

Pareora System.—Orakei Bay, Auckland.

PECTEN CHATHAMENSIS, Hutton, Cat. Tertiary Moll. of N.Z. p. 29.

Pareora System.—Napier; Castle Point, Wellington.

Oamaru System.—Trelissick; Coal Creek, Rangitata.

PECTEN BURNETTI, Zittel, Reise der Novara, Geol. ii., p. 51, pl 10, f. 2.

Pareora System.—Kawau ; Napier; Castle Point, Wellington.

Oamaru System.—Raglan ; Motupipi ; Tata Island ; Takaka ; Oamaru ; Waimea plains ; Winton.

PECTEN POLYMORPHOIDES, Zittel, Reise der Novara, Geol. ii., p. 51, pl. 11., f. 3.

Pareora System.—Cape Rodney.

Oamaru System.—Port Waikato ; Weka Pass ; Trelissick ; Kakanui ; Winton.

PECTEN CONVEXUS, Quoy and Gaimard, Voy. Astrolabe, Zool. iii., p. 443, pl. 76, f. 1-3.

Pareora System.—Castle Point, Wellington.

Found also in the Wanganui System.

PECTEN ZITTELLI, Hutton, Cat. Tertiary Moll. of N.Z., p. 32 ; *Pecten* sp ind. Zittel, Reise der Novara, Geol. ii., pl. 9, f. 3.

Pareora System.—Orakei Bay, Auckland (?).

Oamaru System. — Papakura ; Wangape Lake, Waikato ; West coast, Auckland ; Poverty Bay ; Cape Kidnappers; Waihao ; Caversham ; Haycocks, Mt. Hamilton Southland.

ANOMIA ALECTUS, Gray, Pro. Zool. Soc. of London, 1849, p. 117.

Pareora System —White-rock River.

Found also in the Wanganui System.

ANOMIA UNDATA, Hutton, Trans. N.Z. Institute, XVII., p. 324.

Pareora System.—Hurinui Mound ; Trelissick.

Oamaru System.—Cave Creek, Mt. Somers.

Found also in the Wanganui System.

ANOMIA TRIGONOPSIS, Hutton, Trans. N.Z. Institute, IX., p. 598.

Pareora System.—White-rock River.

PLACUNANOMIA NEOZELANICA, Gray, in Dieffenbach's New Zealand, ii., p. 260.

Pareora System.—Glenwark.

Found also in the Wanganui System.

PLACUNANOMIA INCISURA, Hutton, Cat. Tertiary Moll. of N.Z., p. 34.

Pareora System.—Pareora.

OSTREA WULLERSTORFII, Zittel, Reise der Novara, Geol. ii, p. 54, pl. 11, f. 6.

Pareora System.—Cape Rodney; Kawau.

Oamaru System.—West coast, Auckland; Kaipuki; Kakahu; Oamaru; Waihola Gorge.

OSTREA INGENS, Zittel, Reise der Novara, Geol. ii., p. 54. pl. 13, f. 3.

Pareora System.—Te Aute, Napier; Castle Point, Wellington; Waitotara; Parakino.

OSTREA NELSONIANA, Zittel, Reise der Novara, Geol. ii., p. 55, pl. 11, f. 7.

Pareora System.—Napier; Manawatu Gorge; Awatere; Motunau; Waikari; Orari.

Oamaru System.—Cape Farewell; Tata Island.

OSTREA EDULIS, Linné, Reeve Conch. Icon. f. 8.

Pareora System.—Motunau; Lower Gorge of Waipara; Hampden.

Oamaru System (?)—Kakahu.

Found also in the Wanganui System.

OSTREA INCURVA, Hutton, Cat. Tertiary Moll. of N.Z., p. 35.

Pareora System.—Waihi River, S. Canterbury.

Oamaru System.—Brighton, Westland; Oamaru (?)

NOTES AND EXHIBITS.

Mr. Macleay exhibited specimens of *Nephrurus asper*, Günther, and *Nephrurus levis*, de Vis, sent by Mr. de Vis to illustrate his paper. Also specimens of both sexes of *Diplodactylus tænicauda*, the other species described by Mr. de Vis.

Mr. Macleay also exhibited the *Curculionidæ*, *Brenthidæ*, *Anthribidæ*, and *Longicornia*, collected on the Fly River, New Guinea, mentioned in his paper.

Mr. Sidney Olliff exhibited under the microscope specimens of the remarkable flea, *Echidnophaga ambulans*, described in his paper.

Mr. Fletcher exhibited specimens of *Mixophyes fasciolatus*, Günther, from the gullies about Mt. Wilson (3000ft.) This is a new habitat for this frog, which previously has been recorded only from the Clarence and Tweed Rivers, and Illawarra, N.S.W.; and Pine Mountain, Queensland. Mr. Masters also exhibited a very large specimen of what is probably a new species of the same genus, from Richmond River. This specimen differs from those from Mt. Wilson in having the toes completely, instead of only two-thirds, webbed.

WEDNESDAY, 28TH APRIL, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

MEMBERS ELECTED.

Dr. O. Katz and Mr. L. F. Heydon were duly elected Members of the Society.

DONATIONS.

"Annali del Museo Civico di Storia Naturale di Genova." Series 2nd, Vol. II., 1885. From the Director.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CII., Nos. 1-5, 1886. From the Academy.

"Catalog der ethnologischen Sammlung der Neu Guinea," "On a new Reed Warbler from the Island of Nawodo," *and* "On two New Species of Birds from New Ireland." By O. Finsch, Ph.D. From the Author.

"Tuberculosis in Cattle. Progress Report of the Board appointed to enquire relative to the existence and extent in Victoria of the disease in Cattle known as Tuberculosis." From the Department of Agriculture, Melbourne.

"Journal of the Royal Microscopical Society, London." Ser. II., Vol. V., Pt. 6A., December, 1885. From the Society.

"Transactions of the Entomological Society of London for the year 1885." Part V. From the Society.

"Memoirs of the Geological Survey of India." Vols. IV.-XXII., complete. "Records." Vols. I.-XVIII., complete; with Index of Vols. I.-X. "Palæontologia Indica." Series II.-XIV. complete, excepting Series V., Vol. I., Pts. 5 and 6. "Manual of the Geology of India." Part III. By V. Ball. From the Geological Survey of India.

"Zoologischer Anzeiger." IX. Jahrg., Nos. 216-218. From the Editor.

"Report of the Auckland Institute and Museum." 1885-6. From the Director.

"Nature," Vols. I.-XIII. complete, 1869-1876; also five monthly and three weekly Parts. From Dr. R. B. Read.

"Victorian Naturalist," Vol. II., No. 12. April, 1886. From the Field Naturalists' Club of Victoria.

"Annalen des K. K. Naturhistorischen Hofmuseums Wien." Band I., No. 1, 1886. From the Director.

"Bulletin de la Société Zoologique de France." Tome X., Parts 4, 5 and 6, 1885. From the Society.

"Bericht über die Senckenbergischen naturforschenden Gesellschaft," Frankfurt, 1885. "Reiseerinnerungen aus Algerien und Tunis," von Dr. W. Kobelt. From the Society.

"Horæ Societatis Entomologicæ Rossicæ." Tome XIX., 1885. From the Society.

"Fauna und Flora des Golfes von Neapel." IX. Monographie. "Die Actinien," von Dr. Andres. XI. Monographie. "Die Polycladen," von Dr. Lang. From Dr. E. P. Ramsay, F.R.S.E., &c.

"Annales de la Société Géologique de Belgique." Tome XII., 1884-5. From the Society.

"Bulletin de la Comité Géologique, Institut des Mines St. Pétersbourg." Tome III., Nos. 8-10, 1885. From the Committee.

"Observations on the recent Calcareous Formations of the Solomon Group made during 1882-84." By H. B. Guppy, M.B., F.G.S. From the Author.

ON SOME LEPIDOPTERA FROM THE FLY RIVER.

By E. Meyrick, B.A., F.E.S.

The following species were taken on the Fly River, New Guinea, by the New Guinea Expedition, and with the addition of several species of *Noctuina*, and a few unrecognisable specimens, constituted almost the whole collection of *Heterocera* taken. As such, it is very deficient in numbers, and not particularly remarkable for interest, including only 25 species, of which 15 appear to be new. Nearly all of these may be said to be of normal Indo-Malayan types. The specimens, which from their bad condition, were unidentifiable or unfit for description, included three species of *Bombycina*, one of *Boarmiadæ*, and three of *Botydidæ;* also one possibly referable to the *Depressariadæ.*

BOMBYCINA.

NYCTEMERIDÆ.

Nyctemera, Hb.

1. *Nyct. artemis*, Boisd.

(*Leptosoma artemis*, Boisd., Voy. Astr. V., 199.)
One specimen.

Ctimene, Boisd.

Antennæ in ♂ strongly bipectinated, towards apex simple, moniliform. Palpi short, curved, ascending, filiform. Forewings with transverse vein obsolete between 4 and 6, 6 remote from 9, 7 and 8 out of 9, 11 anastomosing with 12 at a point. Hindwings with vein 5 absent, 6 and 7 tolerably remote at base.

I have given the generic characters, because I am not aware that the genus has been properly defined before; the name is therefore adopted by courtesy. I conjecture that Walker's genus *Bursada* is merely a synonym of this, but it is equally uncharacterised.

2. *Ctim. synestia*, n.sp.

♂. 27 mm. Head, palpi, antennæ, thorax, abdomen, and legs blackish. Forewings somewhat elongate, triangular, costa gently arched, apex rounded, hindmargin obliquely rounded; black, with orange-yellow markings; an oblique transverse oblong spot in disc at ⅓, its upper angle connected with an irregular streak almost from middle of base, which projects beneath near its origin, and again less strongly in middle; a large transverse oblong blotch about ⅔, not reaching costa or anal angle, posterior edge sinuate, lower extremity rounded: cilia black (imperfect). Hindwings with hindmargin rounded; orange-yellow, with a rather narrow black marginal band extending from middle of costa round apex and hindmargin to base of inner margin, dilated round apex, forming an abrupt rounded projection upwards on anal angle, along inner margin attenuated and less defined; cilia black.

One specimen.

LITHOSIADÆ.

PERONETIS, n.g.

Antennæ slender, filiform, in ♂ thinly ciliated on apical half. Palpi short, curved, ascending, loosely scaled beneath, pointed. Forewings with vein 2 from near beyond middle of lower margin of cell, 3 and 4 stalked, 5 from near 3, 6 from near 7, 7 and 8 stalked, 9 absent, 11 anastomosing with 12. Hindwings with vein 2 absent, 3 and 4 from point of angle, 5 absent, 6 and 7 long-stalked, 8 from middle of upper margin of cell; in ♂ inner margin broadly folded over beneath, an oval patch of thickened membrane covering posterior half of upper margin of cell.

3. *Peron. xenodora*, n.sp.

♂. 22 mm. Head, palpi, and thorax ochreous-orange. Antennæ dark fuscous, apical half obscurely ochreous. Abdomen dark fuscous, apical third ochreous-orange. Legs ochreous-orange, anterior tibiæ and tarsi fuscous. Forewings oblong, costa moderately arched on anterior half, hardly posteriorly, apex round, hindmargin obliquely rounded; deep fuscous-purple, with ochreous-orange markings; a streak along basal third of costa, at base extended to inner margin; a slender line along submedian fold from base nearly to anal angle; a moderate fascia from beneath middle of costa to near above anal angle, extremities tolerably pointed, anterior edge straight, posterior edge much curved; a similar almost marginal fascia extending round apex from $\frac{3}{4}$ of costa to below middle of hindmargin, leaving a narrow marginal rim of ground colour, anterior edge concave: cilia dark fuscous (imperfect). Hindwings narrower than forewings, short, subtriangular, apex rounded; dark fuscous; a large ochreous-orange subquadrate spot extending in disc from $\frac{1}{4}$ to $\frac{2}{3}$, almost reaching costa and lower margin, on upper edge towards anterior angle with a cloudy indentation of ground colour; cilia dark fuscous.

One specimen. *Cyme (?) ochropyga*, Feld. Reis. Nov. pl. CXXXIX, 15, from Molucca, is a closely allied and very similar species; and *Cyme (?) pardalina*, ib. pl. CXXXIX, 20, also from Molucca, doubtless belongs to the same genus.

LIPARIDIDAE.

CYPRA, Boisd.

Palpi rather long, second joint rather slender, shortly rough-haired, obliquely ascending, terminal joint nearly as long as second, very slender, cylindrical, horizontal. Antennæ in ♂ moderately bipectinated. Posterior tibiæ with median spurs absent. Forewings with cell long, vein 5 nearer 6 than 4, 7 and 8 out of 9, 10 and 11 stalked, 12 connected with 11 above origin by a cross-bar. Hindwings with transverse vein sharply angulated, 5 absent, 6 and 7 parallel, 8 connected with upper margin of cell rather before middle by a short bar.

I believe the characters of this genus have not been before fully given. It is eccentric in appearance, but correctly referable here

4. *Cypr. delicatula*, Boisd.

(*Cypra delicatula*, Boisd., Voy. Astr., V., 201, pl. I., 3; ? *Cozistra membranacea*, Feld., Reis. Nov. pl. CIV., 5.

These specimens do not show any distinct traces of the obscure dots near the base of the forewings, indicated by Boisduval, but I have no doubt of their identity, his figure being admirably executed and otherwise agreeing precisely; Felder's figure on the other hand, is coarse and of doubtful identification.

Three specimens.

LAELIA, Stph.

Probably (as suggested by Butler) the following species does not belong to this genus, but it does not seem necessary to investigate this here, in view of the uncertain identification of the species, and the absence of information as to the structure of allied genera.

5. *Lael. saturnioides*, Snell. (?).

(*Laelia saturnioides*, Snell., Tijd. v. Ent., 1879, 105, pl. VIII, 7.

Snellen's figure approaches this species very nearly, but may not be identical; it is browner, and the shape of the subterminal line is somewhat different; I do not feel able, however, to describe the New Guinea specimens as distinct at present; Snellen's species was from Celebes.

Two specimens.

ARTAXA, Walk.

The characters of the following species are quite as in *A. lutea*, Fabr., except that in the forewings vein 6 rises from below 7, in the hindwings vein 5 is present, rising from the transverse vein near 4. This difference of neuration is remarkable; the two species are, notwithstanding, so closely allied in all other respects, that I do not consider it at present necessary to separate them generically.

6. *Art. paraneura*, n. sp.

♂ 22-23 mm., ♀ 28-40 mm. Characters of *A. lutea*, but forewings with first line more evenly curved, second line acutely angulated in middle, sinuate inwards on upper and lower portions; ♂ with first line preceded and second followed on lower half by a cloudy ferruginous band; ♀ deeper-coloured than in *A. lutea*, with space between first and second lines of forewings usually ferruginous towards inner margin, lines very indistinct.

Eight specimens (4 ♂, 4 ♀).

GEOMETRINA.

OENOCHROMIDAE.

CELERENA, Walk.

Face smooth. Palpi moderate, porrected or ascending, with appressed scales, rough towards base beneath, terminal joint moderate or short, cylindrical. Antennæ $\frac{3}{5}$, in ♂ filiform, towards apex thinly ciliated, sometimes with a tuft of hairs on back in middle. Thorax densely hairy beneath, in ♂ with a double dense expansible tuft between second and third legs. Abdomen in ♂ beneath with a basal tuft of long fine hairs. Posterior tibiæ in ♂ greatly dilated, with a long expansible tuft of hairs on inner side towards middle, apex produced above into a long horny projection, median spurs below middle, long, slender, crooked, outer apical spur absent, inner stout; posterior tarsi with basal joint long, partially dilated beneath into a projecting plate. Forewings beneath in ♂ sometimes with a fold concealing a deep furrow above posterior half of cell, or with a cushion of short hairs; 7 and 8 out of 9, 10 and 11 stalked, 10 shortly anastomosing with 9 or touching it at a point before 8, 12 anastomosing strongly with 11 below 10. Hindwings with veins 3 and 4 separate, 5 present, 6 and 7 separate, 8 free, remote.

As the characters of the genus are somewhat modified by a knowledge of the following species, I give them in a corrected form.

7. *Cel. lerne*, Boisd.

Callimorpha lerne, Boisd., Voy. Astr. V, 207, p. V, 2.

Antennæ of ♂ with a median tuft of hairs. Palpi ascending, terminal joint very short. Posterior tarsi in ♂ with basal joint dilated on basal half into a rather small rounded plate, second joint moderate, third joint much longer than second, nearly as long as basal. Forewings in ♂ beneath with a thin cushion of hairs forming an oblique ridge across middle of cell, without furrow.

Boisduval's figure is excellent and sufficient.

Three specimens (2 ♂, 1 ♀). According to Walker also from Mysol.

8. *Cel. mutata*, Walk.

(*Celerena mutata*, Walk., Suppl., 167.)

♀. 69 mm. Head, thorax, and abdomen bright deep ochreous-yellow, shoulders with a dark grey spot; palpi porrected, terminal joint moderate. Forewings moderate; bright deep ochreous-yellow; a blackish streak along costa from base to first fascia, continued very narrowly to second; two moderate blackish fasciæ, first from costa before middle, perpendicular, second from costa beyond middle, curved outwards, meeting apex of first in a regular curve near inner margin before anal angle, neither touching inner margin; space beyond and beneath second fascia wholly light ashy grey, darker towards apex; some yellow scales near beyond second fascia above middle: cilia grey. Hindwings bright deep ochreous-yellow; a moderate light ashy-grey marginal band round apex and hindmargin, somewhat narrowed beneath, margined anteriorly by a rather narrow waved blackish fascia; cilia grey.

Two specimens.

9. *Cel. prodroma*, n. sp.

♂ ♀. 55-61 mm. Head, thorax, and abdomen deep ochreous-yellow; palpi ascending, terminal joint very short; antennæ of ♂ without tuft; posterior tarsi in ♂ with basal ¾ of first joint dilated into a large triangular plate, second joint small, rather swollen, third joint much longer than second. Forewings moderate, in ♂ beneath with ridge and furrow extending through posterior ⅔ of cell; deep ochreous-yellow, markings blackish; a streak along costa from base to fascia; a moderately broad perpendicular fascia from costa just before middle, reaching ¾ across wing; a hind-marginal band, extending on costa from ⅔ to apex, attenuated to a point at anal angle, its anterior edge excavated so as to form a curved bend in middle: cilia blackish. Hindwings deep ochreous-yellow; a moderate blackish hindmarginal band, attenuated at extremities, rather broader on upper half, anterior edge shaped as in forewings; cilia blackish.

Five specimens (2 ♂, 3 ♀).

STROPHIDIADÆ.

I substitute this name for that previously adopted, *Microniadæ*, on the consideration that, as the genus *Micronia*, Gn., has no existence, being in fact a synonym of *Strophidia*, Hb., the name *Microniadæ* has no justification; it may also be argued that my family is essentially different from that of Guénée, who included in it even sundry *Noctuina* and other discordant genera, but the former point is the essential one.

STESICHORA, Meyr.

10. *Stes. sphæristis*, n. sp.

♂. 54 mm. Head, thorax, abdomen, and legs white; face and palpi blackish; antennæ pale ochreous; anterior legs dark fuscous above. Forewings moderate, hindmargin gently rounded, slightly waved, oblique; white; two or three round black dots on costa near base; three small irregular black dots on costa near base; three small irregular black spots on costa between these and middle, variable in position; a similar spot on costa towards apex, a larger very irregular apical one, two others almost marginal below apex, lower very small, beneath this an almost marginal dot; a very fine blackish hindmarginal line: cilia white. Hindwings with hindmargin rounded, crenulate, with a short projection in middle; white; two roundish black spots on extremities of veins 6 and 7, and a somewhat larger almost marginal spot on median projection; a black dot on extremities of veins 3 and 5; hindmarginal line and cilia as in forewings.

Although this differs considerably from *S. puellaria*, it might possibly prove to be only a form of that species: it does not differ structurally except in having veins 3 and 4 of the hindwings from a point, which is very probably not constant.

One specimen.

ANTEIA, Meyr.

11. *Ant. acrosema*, n. sp.

♂ ♀. 32-41 mm. Head, thorax, abdomen, and legs white; face and palpi dark fuscous, palpi very short; antennæ whitish; anterior legs dark fuscous above. Forewings moderate, hindmargin rounded; white; costa with numerous minute black dots, rather larger towards base, and one towards apex; a moderate subquadrate apical black spot, beneath which is a small round black spot near hindmargin; a small black erect spot on anal angle: cilia white; veins 3 and 4 from a point. Hindwings with hindmargin rounded, waved, with a short acute projection in middle; white; a short, blackish strigula from apex perpendicular to costa, sometimes broken or reduced; cilia white; veins 6 and 7 from a point.

Two specimens.

STROPHIDIA, Hb.

12. *Stroph. harmonica*, n. sp.

♀. 68 mm. Head, palpi, antennæ, thorax, abdomen, and legs white; face, upper edge of palpi, and anterior legs above dark fuscous; palpi moderately long, slender, filiform, obliquely ascending, consisting almost wholly of the greatly elongated terminal joint. Forewings broad, costa strongly arched, hindmargin hardly rounded; white; costa with ten black strigulæ, tending to be slightly double, whence proceed narrow pale brownish lines, converging somewhat towards inner margin, tending to be partially double and to break up into strigulæ, especially towards middle of wing; fourth and fifth coalescing below middle, sixth double nearly throughout, tenth obsolete towards anal angle; a brown line along hindmargin: cilia white (imperfect). Hindwings with apex and anal angle nearly rectangular, hindmargin produced in middle into a strong triangular projection; white; a faint brownish shade along inner margin; seven faint brownish lines from costa, first five rather converging and becoming obsolete below middle, last two slender, continued parallel to hindmargin throughout, but tending to break up into fine strigulæ; a black tolerably strong hindmarginal line, except on angulation, where it is replaced by three roundish black spots, one on upper side, two on lower; cilia white.

I do not consider the peculiar palpi need involve generic separation.

One specimen.

GEOMETRIDÆ.

THALASSODES, Gn.

In my characters for this genus it is stated by an inadvertence that vein 10 of the forewings rises out of 9 below 8; it should be below 7.

13. *Thal. byrsopis*, n. sp.

♀. 34-40 mm. Head on crown pale bluish-green, between antennæ whitish, face reddish-brown. Palpi reddish-brown above, white beneath. Antennæ pale reddish-ochreous, base whitish. Thorax pale bluish-green. Abdomen whitish, mixed with pale bluish-green. Legs whitish, anterior tibiæ and tarsi light ferruginous. Forewings broad, apex obtuse, hindmargin slightly rounded, anal angle tolerably rectangular; light bluish-green, with very obscure scattered whitish transverse strigulæ; costal edge whitish-ochreous; a nearly straight very obscure whitish line from middle of costa to $\frac{3}{5}$ of inner margin: cilia pale bluish-green, tips whitish; veins 3 and 4 from a point. Hindwings with hindmargin obtusely angulated in middle; colour, strigulæ, and cilia as in forewings; a very obscure whitish line from $\frac{3}{5}$ of costa to vein 2 at $\frac{3}{4}$, thence angulated and proceeding, twice waved, to inner margin at $\frac{3}{4}$.

Very similar to *T. chloropis*, but with the face brown, and other small differences.

One specimen, in poor condition; the description is therefore drawn partly from a second, undoubtedly of the same species, from Northern Queensland.

BOARMIADÆ.

ATELOPTILA, n. g.

Palpi moderate, ascending, basal joint rough-haired, second joint densely scaled beneath, laterally compressed, terminal joint minute, obtuse. Antennæ ⅔, in ♂ strongly bipectinated, apical fourth simple. Thorax and femora hairy beneath. Anal tuft large, spreading. Posterior tibiæ in ♂ dilated, basal half clothed on inner side with a long dense tuft of hairs, spurs short, tarsi short, about half tibiæ. Forewings without perceptible basal impression in ♂; veins 3 and 4 from near together, 6 from near 9, 7 and 8 out of 9, 10 and 11 stalked, 12 connected with 11 at origin from 10 by a short bar. Hindwings with veins 3 and 4 from near together, 5 absent, 6 and 7 from near together, 8 approximated to 7 on anterior half of cell.

Allied to *Boarmia*, but differing in the neuration, the absence of the basal impression in the forewings, and the tufted posterior tibiæ.

14. *Atel. psamathopa*, n. sp.

♂. 54 mm. Head, antennæ, thorax, and abdomen whitish-ochreous, brownish-tinged, sprinkled with fuscous; face and palpi dark brown; legs light greyish, anterior pair fuscous. Forewings moderate, costa hardly arched, hindmargin obliquely rounded, waved; whitish-ochreous, brownish-tinged, irrorated with fuscous; a blackish oblique strigula on costa at ¼, a dot in disc at ¼, and a very oblique strigula from inner margin near base, representing first line; a straight shadowy line from middle of costa to ⅖ of inner margin, irregularly marked with dark fuscous towards costa and inner margin and on a small median spot; second line represented by an irregularly sinuate series of about eight blackish marks, indicating apices of dentations, from ¾ of costa to middle of inner margin; an indistinct fuscous dentate subterminal shade, midway between second line and hindmargin, parallel to hindmargin, interrupted at ¼ from costa and in middle; space between this and second line more brownish-tinged; a row of very indistinct fuscous spots before hindmargin; a hindmarginal row of black dots between veins: cilia whitish-ochreous, base brownish-tinged. Hindwings with hindmargin rounded, dentate; colour, hindmarginal dots, and cilia as in forewings; first line obsolete; a straight fuscous line at $\frac{1}{3}$; a small indistinct dark fuscous discal spot; second line about middle, slender, dentate, slightly sinuate, blackish; subterminal line cloudy, fuscous, dentate; space between this and second line more brownish. Underside of both wings uniform light ashy-grey; discal spots moderate, semilunate, blackish; a darker grey slightly curved postmedian line; forewings with costa spotted with dark and light, and a small dark grey blotch near apex.

One specimen.

PYRALIDINA.

PYRALIDIDÆ.

VITESSA, Moore.

15. *Vit. pyraliata*, Walk.

(*Vitessa pyraliata*, Walk., Suppl., 221, Meyr., Trans. Ent. Soc. Lond., 1886.)

One specimen; also from Port Moresby and Celebes. The yellow markings at the base of the forewings are variable, and not to be relied upon for specific distinction.

SICULODIDÆ.

STRIGLINA, Gn.

Forehead rounded, vertical; ocelli present; tongue well-developed. Antennæ in ♂ simple (?). Labial palpi moderate, obliquely ascending, second joint thickened with dense scales, terminal joint moderately long, cylindrical. Maxillary palpi absent. Thorax and femora densely hairy beneath. Forewings with vein 1 furcate at base, 8 and 9 separate, 9, 10, and 11 closely approximated. Hindwings as broad as forewings; 4 and 5 from near together, 6 from angle, 7 from a bend considerably before angle, 8 free, approximated to 7 shortly opposite transverse vein.

Differs from *Siculodes* by the thorax being densely hairy beneath, and vein 1 of the forewings sharply furcate at base, both forks well-defined; possibly also by the antennæ, which are stated by Guénée to be simple in the ♂, but I regard this as very doubtful. Guénée gives no sufficient characters for this genus, from which probably his *Rhodoneura* (originally only a name without characters, and therefore not to be substituted for it) is not distinct.

16. *Strigl. myrtæa*, Drury.

(*Noctua myrtæa*, Drury, Ill., II, pl. II, 3; *Thermesia fenestrina*, Feld., Reis. Nov., pl. CXVII, 2; *Striglina myrtea*, Gn.. Ann. Soc. Ent. Fr., 1877, 285; *S. fenestrata*, ib., 285.)

♀. 29-31 mm. Head, palpi, and thorax grey, ochreous-tinged, more or less mixed with crimson. Antennæ light greyish-ochreous. Abdomen crimson, segments more or less grey towards base. Legs grey, mixed with crimson beneath. Forewings triangular, costa straight, somewhat bent towards apex, apex rectangular, hindmargin obliquely rounded; crimson, with numerous short grey strigulæ, tending to form nearly straight irregular transverse series; sometimes a small oval semi-transparent white spot in middle of disc; sometimes a white dot on costa towards apex; costal edge pale greyish-ochreous posteriorly, spotted with grey: cilia grey, extreme apex crimson tinged. Hindwings triangular, hindmargin rounded; colour and strigulæ as in forewings; cilia white, basal third dark grey.

Four specimens; also from Celebes and India. There can be no doubt that the spotted and unspotted forms all belong to the same species, though it is a curious form of variation; all the specimens appear to be females, though without dissection I cannot be sure of this; the antennæ are quite simple in all.. There is also variability in the suffusion of the grey markings.

SICULODES, HS.

The following species has vein 1 of the forewings really furcate at base, but the lower branch of the furcation is obsolete, though its origin is quite perceptible; this structure should therefore be attended to. Compare on the other hand the genera of *Pyralididæ*, (*Endotricha*, for example,) where the basal fork tends to disappear not by the obsolescence of one branch, but by the shortening of the furcation.

17. *Sic. hydreutis*, n. sp.

♀. 29 mm. Head, palpi, and antennæ deep ochreous; palpi moderate, ascending, terminal joint moderately long. Thorax ochreous mixed with reddish-brown. Abdomen and legs pale ochreous, anterior legs darker above. Forewings rather elongate-triangular, costa almost straight, apex rounded-rectangular, hindmargin rather obliquely rounded; veins 8 and 9 separate; deep yellow-ochreous, irregularly reticulated with ferruginous-brown; an irregular ferruginous-brown streak along costa from base almost to apex; the reticulations coalesce to form a straight transverse line at $\frac{2}{5}$, dilated considerably towards costa, an irregular streak from beyond middle of costa, where it forms a triangular spot, towards anal angle, where it is shortly furcate, and an irregular streak from $\frac{5}{6}$ of costa to middle of hindmargin: cilia ochreous, basal half tinged with ferruginous-brown. Hindwings moderate, hindmargin rounded; colour, strigulation, and cilia as in forewings; the strigulæ coalesce to form several tolerably distinct irregular lines; a straight one near base; two from costa before middle, suffused together towards costa, first running to $\frac{2}{3}$ of inner margin, second to below middle of hindmargin; a straight irregular streak from costa before apex to hindmargin before middle.

One specimen.

BOTYDIDÆ.

GLYPHODES, Gn.

18. *Glyph. actorionalis*, Walk.

(*Glyphodes actorionalis*, Walk. 498 (nec Ld.); *Lypotigris jovialis*, Feld. Reis. Nov. pl. CXXXVI, 25.)

One specimen; also from New Hebrides, Celebes, and India.

PACHYARCHES, Ld.

19. *Pach. psittacalis*, Hb.

(*Margarodes psittacalis*, Hb. Zut. 523, 524, Gn. 308.)

One specimen; also from Marshall Islands, North Australia, Celebes, China, India, and South Africa.

ARCHERNIS, n. g.

Face rounded, somewhat oblique; ocelli present; tongue well-developed. Antennæ $\frac{3}{4}$, in ♂ shortly ciliated ($\frac{1}{3}$), slightly sinuate below middle, with a short streak of rough scales on back below sinuation. Labial palpi moderate, straight, porrected, second joint with dense projecting scales beneath, terminal joint short, cylindrical, subtruncate, exposed. Maxillary palpi moderate, filiform. Abdomen in ♂ with small anal tuft, valves retracted. Posterior femora fringed with fine hairs beneath, posterior tibiæ with spurs all long and nearly equal. Forewings with veins 8 and 9 stalked, 10 closely approximated to 9, 11 very oblique. Hindwings as broad as forewings; veins 3, 4, 5 approximated at base, 6 out of 7 near origin, anastomosing with 8 to $\frac{1}{3}$.

Nearest to *Semioceros*.

20. *Arch. callixantha*, n. sp.

♂. 25 mm. Head and antennæ yellow, face dull brownish-crimson. Palpi fuscous, oblique lower half white. Thorax yellow, shoulders, a central dot, and a posterior spot dull crimson. Abdomen yellow, rings at $\frac{1}{3}$ and $\frac{2}{3}$, a subapical dot, and sides of two apical segments dull crimson. Legs above pale yellow, apical half of anterior tibiæ, apex of anterior tarsi, and basal third of middle tibiæ dark fuscous, beneath wholly white. Forewings rather elongate-triangular, costa straight, towards apex gently arched, apex obtuse, hindmargin obliquely rounded; bright clear brassy-yellow; costa suffusedly orange-ochreous, costal edge dark fuscous; a dull crimson spot at base of costa; a minute white dot, margined with dark fuscous, beneath costa near base; a dull crimson dot on inner margin at $\frac{1}{5}$; first line slender, ochreous-brown, from towards

$\frac{1}{4}$ of costa to middle of inner margin, obsolete above, indented inwards below middle; a small round white spot, margined with dark fuscous, beneath costa at $\frac{1}{3}$; a larger suboval similar spot beneath middle of costa, margined beneath by a subquadrate ochreous-brown spot reaching middle of disc, and including a white dot in its lower area; second line slender, ochreous-brown, irregularly dentate, from $\frac{4}{5}$ of costa to $\frac{2}{3}$ of inner margin, forming a small quadrate projection posteriorly in middle, and indented rather more sharply beneath costal blotch; cilia whitish-ochreous, brassy-tinged, with an obscure interrupted fuscous line. Hindwings with colour, second line, and cilia as in forewings; an ochreous-brown transverse linear discal spot at $\frac{2}{5}$; a fine indistinct ochreous-brown hindmarginal line, forming a small cloudy spot near anal angle.

One specimen.

NOSOPHORA, Ld,

Face vertical, forehead with a short projection, crown hollowed into a flat groove; ocelli present; tongue well-developed. Antennæ $\frac{3}{4}$, in ♂ evenly ciliated (1), basal joint much thickened with dense scales. Labial palpi rather long, recurved, second joint beneath with a long very dense obliquely projecting tuft of scales which rise vertically upwards, its apex curved inwards, terminal joint moderate, cylindrical, obtuse. Maxillary palpi very short, filiform. Thorax with patagia in ♂ very elongate. Abdomen in ♂ with anal segment elongate, tuft small, valves retracted. Posterior tibiæ in ♂ densely tufted on apical half above with long hairs, outer spurs half inner, posterior tarsi densely tufted with hairs above. Forewings with veins 8 and 9 stalked, 10 closely approximated to 9, 11 very oblique. Hindwings as broad as forewings; veins 3, 4, and 5 closely approximated at base, 7 out of 6 near origin, anastomosing with 8 to near middle.

The position of this genus is next to *Omiodes.*

21. *Nos. ochnodes,* n. sp.

♂. 28 mm. Head, palpi, and antennæ light ochreous, tuft of palpi fuscous. Thorax and abdomen fuscous, anal segments light ochreous on back. Legs whitish-ochreous, anterior tibiæ with a dark grey subapical band, posterior tibiæ dark grey above. Forewings rather elongate-triangular, costa gently arched, apex obtuse, hindmargin obliquely rounded; fuscous; a moderate subtriangular light reddish-ochreous spot on middle of costa, its apex white and semi-transparent, connected with apex of an oblique narrow-oval semi-transparent white spot in disc: cilia fuscous, with a darker basal line. Hindwings fuscous-grey; cilia grey, towards base darker.

One specimen.

CONOGETHES, Meyr.

22. *Con. umbrosa*, n. sp.

♀. 27 mm. Head, palpi, antennæ, thorax, abdomen, and legs whitish-ochreous, greyish-tinged; palpi white towards base. Forewings rather elongate-triangular, costa gently arched, apex obtuse, hindmargin obliquely rounded; pale whitish-fuscous, with slight purplish and brassy reflections, thinly scaled; a short inwards-curved transverse grey line in middle of disc, representing discal spot; a cloudy grey line from $\frac{3}{5}$ of costa to $\frac{3}{5}$ of inner margin, rectangularly bent shortly outwards above middle, thence somewhat sinuate, margined anteriorly on upper $\frac{2}{3}$ by an obscure grey-whitish semi-transparent fascia-like blotch, limited by discal spot, beneath which it is considerably narrowed; a fine fuscous hindmarginal line: cilia grey-whitish, with a fuscous line. Hindwings with colour, hindmarginal line, and cilia as in forewings; a moderately broad rather irregular obscure grey-whitish semi-transparent band somewhat before middle, margined on both sides with cloudy grey lines not reaching costa.

One specimen.

TINEINA.

GLYPHIPTERYGIDÆ.

SIMAETHIS, Leach.

23. *Sim. taprobanes*, Z.

(*Simaethis taprobanes*, Z., Hor. Ross., 1877, 178, pl. II., 65.

One specimen; also from Ceylon.

HYPONOMEUTIDÆ.

ENÆMIA, Z.

This genus (erroneously referred by some to the *Lithosiadæ*) I find to be without doubt correctly placed here, in accordance with Zeller's own view: apart from other characters, conclusive proof is found in the origin of vein 8 of the hindwings, which rises separate as usual in the *Tineina*, and not from the upper margin of the cell, as it invariably does in the *Lithosiadæ.* I have retained for the genus the name under which it was defined by Zeller; the names *Eustixis*, Hb., and *Mieza*, Walk. are practically unaccompanied by any recognisable definition, and cannot therefore be adopted to the displacement of Zeller's name. In the following species the antennæ of ♂ are shortly ciliated ($\frac{1}{2}$); veins 4 and 5 of the forewings almost from a point, 6 and 7 from a point, 7 to below apex, 8 and 9 from very near 7, 11 from cell at $\frac{1}{4}$; transverse vein of hindwings sharply angulated between 5 and 6, a basal pectination beneath lower median vein.

24. *Enæm. pyrilampis*, n. sp.

♂. 31 mm. Head, palpi, and antennæ bright orange, face and sides of crown pale yellowish, base of antennæ dark fuscous. Thorax whitish-yellow, margins of patagia and two curved transverse lines orange, on posterior $\frac{2}{3}$ a dorsal fuscous streak mixed with red. Abdomen orange-red, towards base orange. Legs bright orange. Forewings elongate, costa moderately arched, apex obtuse, hindmargin somewhat oblique, hardly rounded; greyish-fuscous, obscurely mixed with reddish on veins; markings pale whitish-yellow, irregularly margined with red, except on costal margin; a subquadrate blotch on inner margin at base, enclosing a red dot on upper margin near base, and an angulated red posterior streak; an elongate semi-oval spot along costa from $\frac{1}{5}$ to $\frac{2}{5}$; a subquadrate oblique blotch extending along inner margin from $\frac{1}{4}$ to beyond middle, longitudinally bisected by an irregular red line; a small round spot resting on middle of upper margin of this; a triangular spot extending on inner margin from $\frac{2}{3}$ to near anal angle; an elongate blotch extending along costa from $\frac{2}{3}$ to round apex, included veins partially marked with red; costal edge between this and first costal blotch red: cilia fuscous, round apex and beneath anal angle orange. Hindwings and cilia bright orange.

One specimen.

Gen.—?

Forewings with vein 1 furcate at base, 2 from near angle, 7 and 8 stalked, 7 to hindmargin, 11 from somewhat before middle of cell. Hindwings rather narrower than forewings, elongate-ovate; veins 3 and 4 remote, 4 and 5 from a point, transverse vein unevenly angulated between 5 and 6, 6 and 7 tolerably parallel.

The single specimen has lost its palpi, and is moreover a ♀; it is therefore impossible to fix the genus, and I have not attached any name to it; the genus appears allied to *Encæmia*, but differs by the stalking of veins 7 and 8 of the forewings.

25. *Gen.*—(?) *phlogopa*, n. sp.

♀. 22 mm. Head and antennæ yellow, lower part of face and back of crown red. Thorax red, anteriorly yellow (partly defaced). Legs orange. Forewings elongate, moderate, costa moderately arched, apex obtuse, hindmargin hardly rounded, rather oblique; bright yellow; three moderately broad dull red fasciæ margined with deeper and brighter red; first basal, outer edge slightly curved; second somewhat before middle, anterior edge straight, posterior edge considerably dilated towards middle; third submarginal, contracted in middle, beneath this anterior edge forming an acute triangular projection which touches middle of second fascia: cilia bright yellow. Hindwings and cilia bright orange.

One specimen.

CATALOGUE OF THE DESCRIBED COLEOPTERA OF AUSTRALIA.

BY GEORGE MASTERS.

PART IV.

Family. TRIXAGIDÆ.

TRIXAGUS. Kugelann.

3034 ELONGATUS Bonv. Mon. p. 26, t. 1, f. 9.
Australia.

Family. EUCNEMIDÆ.

ARISUS. Bonvouloir.

3035 DEPRESSUS Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p. 136.
Victoria.

TRIGONOPLEURUS. Bonvouloir.

3036 RUGULOSUS Bonv. Ann. Soc. Ent. Fr. 1875 (4), X. Suppl., p. 682, t. 33, f. 2.
Victoria.

DROMŒOLUS. Kiesenwetter.

3037 AUSTRALASIÆ Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p. 231, t. 10, f. 3.
Moreton Bay, Queensland.

3038 DIGNOSCENDUS Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p. 210.
Victoria.

3039 LUGUBRIS Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p 243.
Victoria.

ANABOLUS. Bonvouloir.

3040 MIRUS Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p. 278.
Australia.

PHŒNOCERUS. Bonvouloir.

3041 SUBCLAVATUS Bonv. Mon. Ann. Soc. Ent. Fr. 1871, p. 286, t. 13, f. 1.
Tasmania.

FORNAX. Castelnau.

3042 ADDITUS Bon. Mon. Ann. Soc. Ent. Fr. 1872, p. 342.
Australia.

GALBODEMA. Castelnau.

3043 MANNERHEIMI Casteln. Silb. Rev. III. p. 176; Guér. Ann. Soc. Ent. Fr. 1843, p. 189, t. 6, f. 55-59; Bonv. Mon. Ann. Soc. Ent. Fr. 1872, p. 443, t. 22, f. 1.
Tasmania.

3044 RUFICEPS Bonv. Mon. Ann. Soc. Ent. Fr. 1872, p. 444.
Australia (Murray River.)

ORODOTES. Bonvouloir.

3045 JANSONI Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 717.
N. S. Wales.

LYCAON. Bonvouloir.

3046 EXPULSUS Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 727, t. 35, f. 4.
Melbourne, Victoria.

3047 KRAATZI Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 726.
Australia.

3048 NANUS Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 723.
Moreton Bay, Queensland.

3049 NIGRICANS Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 720, t. 34, f. 9.
N. S. Wales and Victoria.

3050 NOVUS Bonv. Mon. Ann. Soc. Ent. Fr. 1875, p. 724, t. 35, f. 2.
Clarence River, N. S. Wales; Moreton Bay, Queensland.

Family. ELATERIDÆ.

AGRYPNUS. Eschscholtz.

3051 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II., 1872, p. 250; Cand. Révis. I. p. 13; Ann. Mus. Genov. 1878, XII., p. 100.
var. a. *latior*, Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 250.
var. b. *Duboulayi* Cand. Mém. Liége, 1874, (2), IV. p. 13.
var. c. *ereptus* Jans. MSS.; Cand. Mém. Liége, 1874, (2), IV. p. 13.
Gayndah, Cape York, &c.; Queensland.

3052 RESECTUS Cand. Mon. I. Mém. Liége, XII. 1857, p. 45.
N. Australia.

LACON. Castelnau.

3053 ALTERNANS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 251.
Gayndah, Queensland.

3054 ASSUS Cand. Mon. I. Mém. Liége, XII. 1857, p. 145.
N. S. Wales and Queensland.

3055 CALIGINOSUS Guér. Voy. Coquille, Ins. p. 68, t. 2, f. 7; Boisd. Voy. Astrol. Col. p. 98, et p. 105; Cand. Mon. I. Mém. Liége, XII. 1857, p. 144; Dej. Cat. 3 ed. p. 99.
Victoria, N. S. Wales, and Tasmania.

3056 CARINULATUS Cand. Mon. I. Mém. Liége, XII. 1857, p. 152.
N. S. Wales.

3057 CASTELNAUI Cand. Mém. Liége, (2), IX., 1882, p. 11.
Swan River, W. Australia.

3058 COMPACTUS Cand. Mém. Liége, (2), IX., 1882, p. 10.
N. Australia.

3059 CORDIPENNIS Cand. Mém. Liége, (2), IV. 1874, p. 99.
Albany, King George's Sound, W. Australia.

3060 CORVINUS Cand. Mém. Liége, (2), IX. 1882, p. 12.
Swan River, W. Australia.

3061 COSTIPENNIS Germ. Linn. Ent. III. 1848, p. 181.
S. Australia and Victoria.

3062 CRASSUS Cand. Mém. Liége, (2), IV. 1874, p. 88.
Cape York, N. Australia.

3063 DEALBATUS Cand. Mém. Liége, (2), IX. 1882, p. 13.
Cape York, N. Australia.

3064 DIVARICATUS Cand. Mém. Belg. XVII. 1865, p. 12.
Melbourne, Victoria.

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Australia.

3260 MINIMUS Cand. Mém. Belg. XXI. 1878, p. CLXXI.
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3261 PULSI Cand. Mém. Belg. XXI. 1878, p. CLXX.
N. S. Wales.

3262 ROTUNDICOLLIS Cand. Mém. Belg. XXI. 1878, p. CLXXI.
Australia.

3263 SENICULUS Cand. Mon. IV. Mém. Liége, XVII. 1863, p 197.
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Australia.

3265 SULCATUS Cand. Mém. Belg. XXI. 1878, p. CLXXI.
Australia.

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Tasmania.

3267 TESTACEUS Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 198.
Australia.

3268 VICTORIÆ Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 197.
Victoria.

PARASAPHES. Candèze.

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Queensland.

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3270 BREVICORNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 259,
Northern parts of N. S. Wales, and Southern Queensland.

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3280 QUADRIGUTTATUS Erichs. Wiegm. Arch. 1842, I. p. 139.
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LUDIUS. Latreille.

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3284 HYDROPICUS Cand. Mém Liege, (2), IX. 1882, p. 104.
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3285 LINEATUS Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 304.
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AGRIOTES. Eschscholtz.

3286 QUADRIPUNCTATUS Blanch. Voy. Pole Sud, IV. p. 91, t. 6, f. 13.
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ACRONIOPUS. Erichson.

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Gayndah, Queensland.

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Gayndah, Queensland.

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Sydney, N. S. Wales.

ASCESIS. Candèze.

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Gayndah, Queensland.

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3297 BADIIPENNIS Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 443.
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3298 FUSIFORMIS Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 444.
N. Australia.

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3304 LINEATUS Cand. Mém. Belg. XXI. 1878, p. CXCVI.
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3305 LONGICORNIS Cand. Mém. Liége, (2), IX. 1882, p. 105.
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MACROMALOCERA. Hope.

3306 CERAMBOIDES Hope. Trans. Ent. Soc. Lond. I. 1834, p. 14, t. 1, f. 3.
Australia.

3307 CÆNOSA Hope. Trans. Ent. Soc. Lond. I. 1834, p. 14; Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 501.
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3308 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 261.
Gayndah, Queensland.

STICHOTOMUS. Candèze.

3309 CORRIGIOLATUS Germ. Linn. Ent. III. p. 181; Cand. Mon. IV. Mém. Liége, XVII. 1863, p. 507.
S. Australia.

Family. CEBRIONIDÆ.

CEBRIO. Olivier.

3310 RUBRIPENNIS Guér. Voy. Coquille, Ent. p. 70; Boisd. Voy. Astrol. II. p. 112.

Family. RHIPIDOCERIDÆ.

CALLIRRHIPIS. Latreille.

3311 RUFICORNIS Gray. Griff. Anim. Kingd. Ins. I. p. 336, t. 39, f. 2; Casteln. Mon. p. 248.
N. S. Wales.

ENNOMETES. Pascoe.

3312 LACORDAIREI Pascoe. Journ. of Ent. II. p. 445, t. 19, f. 2.
Moreton Bay, Queensland.

RHIPIDOCERA. Latreille.

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Swan River, W. Australia.

3314 DRURYI Westw. Drury, Ill. ed. 2, p. 72, t. 48, f. 7.
mystacina Drury, Ins. III. p. 279, t. 48, f. 7; Guér. Spec. et jc. nr. 1, p. 6.
Australia.

3315 MYSTACINA Fab. Syst. Ent. p. 70; Herbst. Käf. V. p. 45, t. 46, f. 13; Casteln. Mon. p. 235, t. 2, f. 3, a-c; Guér. Spec. et. jc. fasc. 1, nr. 1, p. 5; C. O. Waterhouse, Trans. Ent. Soc. Lond. 1875, p. 202.
Victoria, N. S. Wales, S. Australia.

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Swan River, W. Australia.

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Swan River. W. Australia.

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N. S. Wales.

3319 VESTITA Casteln. Hist. Nat. I. p. 256.
Australia.

3320 VETUSTA Gory. Guér. jc. règn. anim. p. 44; Guér. Spec. et. jc. fasc. 1, nr. 1, p. 7. f. 14-17.
brunnea Westw. Proc. Ent. Soc. Lond. 1842, p. 64; Ann. Nat. Hist. XI. 1843, p. 66.
Australia.

PSACUS. Pascoe.

3321 ATTAGENOIDES Pascoe. Journ. of Ent. II. p. 446, t. 18. f. 4.
S. Australia.

3322 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 313.
Gayndah, Queensland.

Family. DASCILLIDÆ.

DASCILLUS. Latreille.

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Gayndah, Queensland.

SCIRTES. Illiger.

3324 EXOLETUS C. O. Waterhouse. Cist. Ent. II. 1880, p. 573.
W. Australia.

HELODES. Latreille.

3325 ATKINSONI C. O. Waterh. Ent. Month. Mag. 1877, XIV., p. 27.
Tasmania.

3326 AUSTRALIS Erichs. Wiegm. Arch. 1841, I. p. 184.
Tasmania.

3327 MACULATUS C. O. Waterh. Ent. Month. Mag. 1877, XIV., p. 27.
Tasmania.

Family. MALACODERMIDÆ,

TRICHALUS. C. O. Waterhouse.

3328 AMPLIATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 83, t. 2, figs. 97-101.
Moreton Bay, Queensland.

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Tasmania.

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Port Bowen, Queensland.

3331 SERRATICORNIS Fab. (Lycus). Syst. Ent. p. 203 ; Oliv. Ent. II. (29), p. 12, t. 1, f. 14 ; Boisd. Voy. Astrol. II. p. 124 : C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 84, t. 2, figs. 109-112.
Australia.

3332 SULCATUS C. O. Waterh. Trans. Ent. Soc. Lond., 1877, p. 83, t. 2, figs. 102-105.
Brisbane, Port Essington, &c.

METRIORRHYNCHUS. Guérin.

3333 ABDOMINALIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 75, t. 1, figs. 19-22.
Porrostoma abdominale C. O. Waterh.
Eastern Australia.

3334 APICALIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 77, t. 1, figs. 39-44.
Porrostoma apicale C. O. Waterh.
Cape York, Port Essington, &c., N. Australia.

3335 ATRATUS Fab. Syst. El. II, p. 113 ; Lacord. Gen. Col. IV., p. 297, nota 2.
Australia.

3336 BREVIROSTRIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 74, t. 1, figs. 13-14.
Porrostoma brevirostre C. O. Waterh.
N. W. Australia.

3337 CINCTUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 80, t. 2, figs. 73-77.
Porrostoma cinctum C. O. Waterh.
Brisbane, Queensland.

3338 CLIENTULUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 81, figs. 78-81.
Porrostoma clientulum C. O. Waterh.
Moreton Bay, Queensland.

3339 DICHROUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 86, figs. 86-87.
Porrostoma dichroum C. O. Waterh.
King George's Sound, W. Australia.

3340 ELEGANS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 75, t. 1, figs. 23-27.
Porrostoma elegans C. O. Waterh.
Clarence River, N. S. Wales; Rockhampton, Queensland.

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Tasmania.

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Porrostoma fallax C. O. Waterh.
Moreton Bay, Queensland.

3343 FEMORALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 262; C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 85.
Gayndah, &c., Queensland.

3344 HÆMORRHOIDALIS C. O. Waterh. Trans. Ent. Soc. Lon. 1877, p. 79, t. II., figs. 61a-64a.
Porrostoma hæmorrhoidale C. O. Waterh.
Tasmania.

3345 INQUINULUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 81, t. 2, figs. 82-86.
Porrostoma inquinulum C. O. Waterh.
Australia.

3346 IRREGULARIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 76, t. 1, figs. 18-18a.
Porrostoma irregulare C. O. Waterh.
Mackenzie River.

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N. S. Wales.

3348 LIMBATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 81, t. 2, figs. 88-91.
Porrostoma limbatum C. O. Waterh.
Australia.

3349 LINEATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 78, t. 1, figs. 45-48.
Porrostoma lineatum C. O. Waterh.
N. W. Australia.

3350 LUGUBRIS C. O. Waterh. Trans. Ent Soc. Lond. 1877, p. 80, t. 2, figs. 69-72.
Porrostoma lugubre C. O. Waterh.
Australia.

3351 MARGINATUS Erichs. Wiegm. Arch. 1842, I. p. 145; C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 85.
Tasmania.

3352 MARGINICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales. II 1872, p. 263; C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 86.
Gayndah, Queensland.

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Gayndah, Queensland.

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Australia.

3355 PLAGIATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 80, t. 2, figs. 65-68.
Porrostoma plagiatum C. O. Waterh.
E. Australia.

3356 RHIPIDIUS W. S. Macleay. King's Survey, II. 1827, App. p. 442; Lacord. Gen. Col. IV. p. 297, note 1.
septemcavus W. S. Macleay. King's Survey, II. 1827, App. p. 442; C. O. Waterh. Trans. Ent. Soc. Lond. 1887, p. 84.
N. S. Wales and Queensland.

3357 RUFIPENNIS Fabr. Syst. El. II. p. 114; Erichs. Wiegm. Arch. 1842, I. p. 145; Blanch. Voy. Pole Sud, IV. p. 75, t. 5, f. 12.
nigrirostris W. S. Macleay. Dej. Cat. 3 ed. p. 111; C, O. Waterhouse. Trans. Ent. Soc. Lond. 1887, p. 74. t. 1, figs. 10-12.
Tasmania.

3358 RUSSATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 77, t. 1, figs 36-38.
Porrostoma russatum C. O. Waterh.
Port Bowen, Queensland.

3359 SALEBROSUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 79, t. 2, figs. 61-64.
Victoria and Tasmania.

3360 SCALARIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 79. t. 1, figs. 53-56.
Porrostoma scalare C. O. Waterh.
N. W. Australia.

3361 TEXTILIS C. O. Waterhouse. Trans. Ent. Soc. Lond. 1877, p. 77, t. 1, figs. 32-35.
Porrostoma textile C. O. Waterh.
Moreton Bay, Queensland.

3362 TOGATUS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 78, t. 1, figs. 49-52.
Porrostoma togatum C. O. Waterh.
N. W. Australia.

3363 UNIFORMIS C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 76, t. 1, figs. 28-31.
Porrostoma uniforme C. O. Waterh.
Port Bowen, Queensland.

CALOPTERON. Guérin.

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Australia.

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Tasmania.

CALOCHROMUS. Guérin.

3366 BASALIS C. O. Waterh. Cist. Ent. 1877, II. p. 196, f. 2.
Swan River, W. Australia.

3367 DISCICOLLIS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 101.
Rockhampton, Queensland.

3368 GUERINI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 263; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 101.
Gayndah, Queensland.

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Sydney, N. S. Wales.

XANTHEROS. Fairmaire.

3370 ANGULICOLLIS Fairm. Pet. Nouv. 1877, II. p. 167; Journ. Mus. Godeffr. 1879, XIV. p. 100.
Brisbane, Queensland.

3371 NUBICOLLIS Fairm. Pet. Nouv. 1877, II. p. 167; Journ. Mus. Godeffr. 1879, XIV. p. 99.
Queensland.

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N. S. Wales.

EROS. Newman.

3373 SCUTELLARIS Erichs. Wiegm. Arch. 1842, I. p. 146.
Bremei Le Guillou. Rev. Zool. 1844, p. 221; C. O. Waterh. Trans. Ent. Soc. Lond. 1877, p. 84. t. II. figs. 113-115.
Tasmania.

LUCIOLA. Castelnau.

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Guérini Casteln. Essai, p. 151, nota.
nigripennis Latr. Dej. Cat. 3 ed. p. 116.
Australia.

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apicalis Boisd. Voy. Astrol. II. p. 127; Dej. Cat. 3 ed. p. 116.
Australia.

3376 FLAVICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 163.
Gayndah, Queensland.

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Cape York, N. Australia.

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S. Australia.

TELEPHORUS. Schaffer.

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Australia.

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Gayndah, Queensland.

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N. S. Wales.

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Southern parts of Queensland.

3383 NOBILITATUS Erichs. Wiegm. Arch. 1842, I. p. 146.
Tasmania.

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Australia. (Widely distributed.)

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pusillus Bohem. Res. Eugen. 1858, p. 80.
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Gayndah, Queensland.

3387 STICTICUS Gemming. Col. Heft. VI. 1870, p. 120.
pictus Casteln. Hist. Nat. I. p. 275.
Australia.

3388 TRICOLOR Casteln. Hist. Nat. I. p. 275.
Australia.

HETEROMASTIX. Boheman.

3389 BICOLOR Bohem. Res. Eugen. p. 81, t. 1. f. 3.
N. S. Wales.

ICHTHYURUS. Westwood.

3390 DEPRESSICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 264.
Gayndah, Queensland.

SELENURUS. Fairmaire.

3391 LUTEO-PICTUS Fairm. Pet Nouv. 1877, II. p. 167 ; Journ. Mus. Godeffr. XIV. 1879, p. 99.
Peak Downs, Queensland.

HELIOTIS. Castelnau.

3392 HOPEI Casteln. Silb. Rev. IV. p. 18 ; Hist. Nat. I. p. 257.
Swan River, W. Australia.

HAPALOCHRUS. Erichson.

3393 CINCTUS Redtenb. Reis. Novar. II. p. 106 ; Fairm. Journ. Mus. Godeffr. XIV. 1879, p. 103.
N. S. Wales.

LAIUS. Guérin.

3394 ASPERIPENNIS Fairm. Pet. Nouv. 1877, II., p. 174 ; Journ. Mus. Godeffr. 1879, XIV. p. 104.
Queensland.

3395 BELLULUS Guér. Voy. Coquille, p. 78; Boisd. Voy Astrol. II. p. 135; Germ. Linn. Ent. III. 1848, p. 182; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 103.
Australia. (Widely distributed).

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Peak Downs, Queensland.

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Peak Downs, Queensland.

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Peak Downs, Queensland.

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Gayndah, Queensland.

3400 OBLONGOSIGNATUS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 104.
Peak Downs, Queensland.

3401 PLAGIATICOLLIS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 102.
Australia.

3402 QUINQUENOTATUS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 102.
Rockhampton, Queensland.

3403 QUINQUEPLAGIATUS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 102.
Queensland.

3404 RUFOVIRENS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 103.
Gayndah, Queensland.

3405 RUGULIPENNIS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 102.
Peak Downs, Queensland.

3406 TRISIGNATUS Germ. Linn. Ent. III. p. 182; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 104.
S. Australia.

3407 VERTICALIS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 101.
Peak Downs, Queensland.

MALACHIUS. Fabricius.

3408 LURIDICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 265.
Gayndah, Queensland.

ATTALUS. Erichson.

3409 ABDOMINALIS Erich. Wiegm. Arch. 1842, I. p. 147.
Tasmania.

3410 AUSTRALIS Fairm. Pet. Nouv. 1877, II. p. 174; Journ. Mus. Godeffr. 1879, XIV. p. 104.
Sydney, N. S. Wales.

CARPHURUS. Erichson.

3411 ÆNEIPENNIS Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 107.
Peak Downs, Queensland.

3412 ALTERNIVENTRIS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 108.
Peak Downs, Queensland.

3413 APICALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 266; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 106.
Gayndah, Queensland.

3414 ARMIPENNIS Fairm. Journ. Mus., Godeffr. 1879, XIV. p. 109.
Queensland.

3415 ATRONITENS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 109.
Sydney. N. S. Wales.

3416 AZUREIPENNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 266; Fairm. Journ. Mus. Godeffr. 1879, XIV., p. 108.
Gayndah, Queensland.

3417 BASIPENNIS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 109.
Peak Downs, Queensland.

3418 BIPLAGIATUS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 110.
Peak Downs, Queensland.

3419 BREVIPENNIS Germ. Linn. Ent. III. 1848, p. 183; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 110.
S. Australia.

3420 CERVICALIS Germ. Linn. Ent. III. 1848, p. 183; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 107.
S. Australia.

3421 CRISTATIFRONS Fairm. Pet. Nouv. 1877. II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 105.
Sydney, N. S Wales.

3422 CYANEIPENNIS Macleay. Trans. Ent. Soc. N. S. Wales. II. 1872, p. 265; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 108.
Gayndah, Queensland.

3423 DIOPHTHALMUS Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 107.
Gayndah, Queensland.

3424 ELONGATUS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 266; Fairm. Journ. Mus. Godeffr. 1879, II. p. 105.
Gayndah, Queensland.

3425 FACIALIS Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 107.
Sydney, N. S. Wales,

3426 FASCIIPENNIS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 109.
Peak Downs, Queensland.

3427 LÆSIFRONS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 107.
Peak Downs, Queensland.

3428 MARGINIVENTRIS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 106.
Syndey, N. S. Wales.

3429 NUBIPENNIS Fairm. Journ. Mus. Godeffr. 1879. XIV. p. 106.
Peak Downs, Queensland.

3430 PALLIDIPENNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 267; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 105.
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3431 PHILONTHOIDES Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 108.
Rockhampton, Queensland.

3432 RHAGONYCHINUS Fairm. Journ Mus. Godeffr. 1879, XIV. p. 108.
Sydney, N. S. Wales.

3433 SCAPULATUS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 109.
Rockhampton, Queensland.

3434 SEGMENTARIUS Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 106.
Peak Downs, Queensland.

3435 TACHYPOROIDES Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 105.
Peak Downs, Queensland.

3436 TELEPHOROIDES Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 106.
Peak Downs, Queensland.

3437 XANTHOCHROUS Fairm. Pet. Nouv. 1877, II. p. 161; Journ. Mus. Godeffr. 1879, XIV. p. 105.
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BALANOPHORUS. Macleay.

3438 BIPLAGIATUS Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 110.
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3439 JANTHINIPENNIS Fairm. Journ Mus. Godeffr. 1879, XIV. p. 110.
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3440 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 267 ; Fairm. Journ. Mus. Godeffr. 1879, XIV. p. 110.
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HELCOGASTER. Boheman.

3441 BRACHYPTERA Bohem. Res. Eugen. 1858, p. 82.
N. S. Wales.

3442 CYANOPTERA Bohem. Res. Eugen. 1858, p. 82, t. 1, f. 4.
N. S. Wales.

3443 IMPRESSIFRONS Bohem. Res. Eugen. 1858, p. 83.
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AGASMA. Newman.

3444 SEMICRUDUM Newm. The Zoologist, App. p. 116.
Northern parts of N. S. Wales, and Southern Queensland.

Family. CLERIDÆ

CYLIDRUS. Latreille.

3445 BASALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 268.
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3446 CENTRALIS Pascoe. Journ. of Ent. I. 1860, p. 44.
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3447 NIGRINUS White. Clerid. IV. 1849, p. 48.
Tasmania.

TILLUS. Olivier.

3448 DUX Westw. Proc. Zool. Soc. 1852, p. 46, t. 24, f. 11.
Swan River, W. Australia.

3449 HILARIS White. Clerid. IV. p. 48; Westw. Proc. Zool. Soc. 1852, p. 50, t. 26, f. 12.
Tasmania.

OPILO. Latreille.

3450 APICALIS White. Clerid. IV. 1849, p. 56.
Australia.

3451 CONGRUUS Newm. The Entomol. 1842, p. 365.
var. *femoralis* Westw. White, Clerid. IV. p. 55.
Australia. (Widely distributed.)

3452 EBURNEO-CINCTUS Gorham. Trans. Ent. Soc. Lond. 1878, p. 160.
N. S. Wales.

3453 EPHIPPIGER White. Clerid. IV. p. 57.
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3454 EPHIPPIUM Boisd. Voy. Astrol. II. p. 139, t. 6, f. 15.
Victoria.

3455 INCERTUS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 269.
Gayndah, Queensland.

3456 MŒRENS Westw. White, Clerid. IV. p. 57; Proc. Zool. Soc. Lond. 1852, p. 50, t. 26, f. 10.
S. Australia.

3457 PASCOEI Gorham. Cist. Ent. II. 1876, p. 71.
N. S. Wales.

3458 SEXNOTATUS Westw. White, Clerid. IV. p. 57; Proc. Zool. Soc., 1852, p. 51, t. 26, f. 7.
var. *pulcher* White, Clerid. IV. p. 58; Westw. Proc. Zool. Soc. Lond. 1852, p. 51.
Tasmania.

NATALIS. Castlenau.

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N. S. Wales and Queensland.

3460 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 269.
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ORTHRIUS. Gorham.

3463 CYLINDRICUS Gorham. Cist. Ent. II. 1876, p. 74.
N. S. Wales.

THANASIMUS. Latreille.

3464 ACCINCTUS Newm. The Entoml. 1842, p. 364.
var. *medianus* Westw. White, Clerid. IV. p. 55.
var. *viduus* Westw. White, Clerid. IV. p. 55.

3465 ACERBUS Newm. The Entoml. p. 364.
Victoria.

3466 CONFUSUS Newm. The Entoml. p. 364.
Victoria.

3467 CURSORIUS Westw. Proc. Ent. Soc. Lond. 1852, p. 53, t. 25, f. 5.
S. Australia.

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N. S. Wales and Queensland.

3469 RUFIMANUS Gorham. Cist. Ent. II. 1876, p. 74.
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CLERUS. Geoffroy.

3471 APICALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872. p. 271.
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3472 CRASSUS Newm. The Entomol. p. 15; Klug, Mon. p. 387.
Australia.

3473 CRUCIATUS W. S. Macleay. King's Survey, II. p. 442; Klug. Mon. p. 386.
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3481 ALBOFASCIATUS Gorham. Cist. Ent. II. 1876, p. 85.
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3482 CHRYSURUS Chev. Rev. Mag. Zool. (3), II. 1874, p. 299.
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3483 CORALLIPES Chev. Rev. Mag. Zool. (3), II. 1874, p. 298.
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3484 FOVEICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 272.
Gayndah, Queensland.

3485 IMPERIALIS Gorham. Cist. Ent. II. 1876, p. 84.
Queensland.

3486 INSTABILIS Newm. The Entomol. p. 15; Klug, Mon. p. 341; Spin. Mon. I. p. 331, t. 28, f. 1.
var. *castanipes* Westw. White, Clerid. IV. p. 60.
var. *episcopalis* Spinola. (olim.)
var. *tibialis* Westw. White, Clerid. IV. p. 60.
Australia. (Widely distributed.)

3487 LÆTUS Chev. Mem. Fam. Cler. 1878, p 16.
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3488 LEMOIDES Pascoe. Journ. of Ent. I. 1860, p. 47.
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3489 MELLINIPES Chev. Mem. Fam. Cler. 1878, p. 16.
Australia.

3490 MULTICOLOR Chev. Mem. Fam. Cler. 1878, p. 16.
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3491 OCHRURUS Chev. Mem. Fam. Cler. 1878, p. 16.
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3492 PLUTUS Chev. Rev. Mag. Zool. (3), II. 1874, p. 298.
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3497 VIRIDISSIMUS Pascoe. Journ. of Ent. I. 1860, p. 47.
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3498 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 273.
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3500 ZONATUS Blanch. Voy. Pole Sud, p. 62.
N. S. Wales.

TROGODENDRON. Guérin.

3501 FASCICULATUM Schreib. Trans. Linn. Soc. 1802, VI. p. 195, t. 20, f. 6; Klug, Mon. p. 326; Spin. Mon. I. p. 212, t. 18, f. 1.
var. *honestum* Newm. The Entomol. p. 16; Lacord. Gen. Col. IV. p. 454.
Australia. (Widely distributed).

3502 MONSTROSUM Gorham. Cist. Ent. II. 1876, p. 87.
Queensland.

SCROBIGER. Spinola.

3503 ALBOCINCTUS Pascoe. Journ. of Ent. I. 1860, p. 46.
Moreton Bay, Gayndah &c.; Queensland.

3504 IDONEUS Newm. The Entomol. 1842, p. 363.
Victoria.

3505 SPLENDIDUS Newm. The Entomol. 1840, p. 15; *Reichei* Spin. Mon. I. p. 232, t. 14, f. 1.
Australia. (Widely distributed.)

OLESTERUS. Spinola.

3506 AUSTRALIS Spin. Mon. I. p. 229, t. 20, f. 2.
Swan River, W. Australia.

3507 CRUENTATUS Chev. Rev. Mag. Zool. (3), II. 1874, p. 300.
Australia.

3508 GRACILIS Gorham. Cist. Ent., II. 1876, p. 87.
Australia.

EBURIPHORA. Spinola.

3509 PATRICIA Klug. Mon. 325.
Tasmania.

ZENITHICOLA. Spinola.

3510 AUSTRALIS Boisd. Voy. Astrol. Col. p. 142; Spin. Mon. I. p. 826, t. 28, f. 2; Dej. Cat. 3 ed. p. 127.; Lacord. Gen. Atl. t. 46, f 3.
N. S. Wales.

3511 FULGENS Chev. Ann. Soc. Ent. Fr. 1843, p. 41.
N. S. Wales.

3512 FUNESTUS Chev. Rev. Mag. Zool. (3), II. 1874, p. 300.
N. S. Wales.

3513 OBESUS White. Stoke's Voy. App. t. 1, f. 9.
var. *obesulus* White. Clerid. IV. p. 26.
N. S. Wales and Queensland.

3514 SOSIUS Chev. Rev. Mag. Zool. (3), II. 1874, p, 301.
Australia.

ELEALE. Newman.

3515 ALBO-SCUTELLATA Chev. Rev. Mag. Zool. (3), II. 1874, p. 310.
Australia.

3516 ANORMIS Chev. Rev. Mag. Zool. (3), II. 1874, p. 311.
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3517 APICALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p, 274.
Gayndah, Queensland.

3518 ASPERA Newm. The Entomol., 1841, p. 3.
rugosa Newm. The Entomol., 1842, p. 364.
herbacea Homb. et Jacq. Atl., t. 5, f. 1.
unicolor Spin. Mon. I. p. 279, t. 21, f. 5.
Blanch., Voy. Pole Sud, IV. p. 63.
Australia.

3519 AULICODES Gorham. Cist. Ent. II. 1876, p. 90.
N. W. Australia.

3520 BASICORNIS Chev. Mem. Fam. Cler., 1878, p. 20.
Australia.

3521 BREVICORNIS Chev. Rev. Mag. Zool. (3), II. 1874, p. 312.
S. Australia.

3522 BREVIS Gorham. Cist. Ent. II. 1876, p. 90.
Freemantle, W. Australia.

3523 CHLORIS Chev. Mem. Fam. Cler., 1878, p. 21.
Australia.

3524 CHRYSIDEA Westw. Proc. Zool. Soc. Lond. 1852, p. 50.
var. *æruginosa* Westw. l.c., p 51.
var. *atricornis* Westw. l.c., p. 51.
King George's Sound, W. Australia.

3525 DISPARIPES Chev. Rev. Mag. Zool. (3), II. 1874, p. 313.
Swan River, W. Australia.

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Gayndah, Queensland.

3527 EXCAVATA Westw. Proc. Zool. Soc. 1852, p. 46, t. 24, f. 10.
Australia.

3528 FASCIATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 273.
Gayndah, Queensland.

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N. S. Wales.

3530 HERBACEA Chev. Rev. Mag. Zool. (3), II. 1874, p. 310.
Australia.

3531 INTRICATA Klug. Mon. p. 307; Spin. Mon. II. p. 141. t. 15, f. 5.
Tasmania.

3532 LANATA Chev. Rev. Mag. Zool. (3), II. 1874, p. 312.
Tasmania.

3533 LATE-FASCIATA Gorham. Cist. Ent. II. 1876, p. 90.
Queensland.

3534 LATICINCTA Chev. Rev. Mag. Zool. (3), II. 1874, p. 313.
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3535 LEPIDA Pascoe. Journ. of Ent. I. 1860, p. 45.
Moreton Bay, Gayndah, &c.; Queensland.

3536 OBSCURA Newm. The Entomol. 1841, p. 16; Klug, Mon. p. 388.
Australia.

3537 PULCHRA Newm. The Entomol. 1841, p. 16; Klug, Mon. p. 388
bimaculata Spin. Mon. I. p. 281, t. 20, f. 1.
South Australia.

3538 REICHEI Spin. Mon. 1. p. 155, t. 7, f. 3.
Swan River, W. Australia.

3539 SCROBICULATA Spin. Mon. I. p. 156.
foveolata Spin. Mon. I. p. 156, t. 15, f. 4.
Australia.

3540 SELLATA Pascoe. Journ. of Ent. I. 1860, p. 45.
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3541 SEMICHRYSEA Chev. Rev. Mag. Zool. (3), II. 1874, p. 309.
Australia.

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leucaspis Germ. Linn. Ent. III. p. 186.
South Australia.

3543 SIMULANS Pascoe. Journ. of Ent. I. 1860, p. 45.
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3544 SMARAGDINA Chev. Mem. Fam. Cler. 1878, p. 21.
Australia.

3545 SPECULUM Chev. Rev. Mag. Zool. (3), II. 1874, p. 309.
Tasmania.

3546 TASMANIÆ Chev. Rev. Mag. Zool. (3), 1874, p. 310.
Tasmania.

3547 VENUSTULA Chev. Mem. Fam. Cler. 1878, p. 21.
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3548 VIRIDICOLLIS Macleay. Trans. Ent. Soc., N. S. Wales, II. 1872, p. 274.
Gayndah, Queensland.

3549 VIRIDIS Guér. Jc. règn. anim. p. 52; Spin. Mon. I. p. 153, t. 6, f. 2.
Australia.

STIGMATIUM. Gray.

3550 ALBIFRONS Chev. Mem. Fam. Cler. 1878, p. 25.
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3551 FASCIATOVENTRE Chev. Rev. Mag. Zool. (3), II. 1874, p. 316.
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3552 FLAVESCENS Chev. Rev. Mag. Zool. (3), II. 1874, p. 316.
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3554 LINEALBA Chev. Rev. Mag. Zool. (3), II. 1874, p. 316.
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3560 VARIPES Chev. Mem. Fam. Cler. 1878, p. 26.
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Queensland.

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OMADIUS. Castelnau.

3563 OLIVACEUS Westw. Proc. Zool. Soc. 1852, p. 44, t. 26, f. 3.
Prince of Wales Island, N. Australia.

3564 PRASINUS Westw. Proc. Zool. Soc. 1852, p. 53, t. 26, f. 2.
N. S. Wales; Queensland.

LEMIDIA. Spinola.

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Australia.

3566 BIFURCATA Gorham. Trans. Ent. Soc. Lond. 1877, p. 256.
W. Australia.

3567 CARISSIMA Pascoe. Journ. of Ent. I. 1860, p. 48; Gorham, Trans. Ent. Soc. Lond. 1877, p. 250.
S. Australia.

3568 CONCINNA Gorham. Trans. Ent. Soc. Lond. 1877, p. 255.
N. S. Wales.

3569 CONFERTA Newm. The Entomol. 1842, p. 365: Lacord. Gen. Col. IV. p. 471, nota.
Australia.

3570 DIA Gorham. Trans. Ent. Soc. Lond. 1877, p. 252.
W. Australia.

3571 ELONGATA Gorham. Trans. Ent. Soc. Lond. 1877, p. 253.
S. Australia.

3572 EXILIS Westw. Proc. Zool. Soc. Lond. 1852, p. 48. t. 27, f. 4.
S. Australia.

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Australia.

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W. Australia.

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S. Australia.

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corallipennis Westw. Proc. Zool. Soc. 1852, p. 47, t. 25, f. 2.
N. S. Wales and Queensland.

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3579 INTERRUPTA Gorham. Trans. Ent. Soc. Lond. 1877, p. 252.
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3580 LABIATA Gorham. Trans. Ent. Soc. Lond. 1877, p. 256,
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Tasmania.

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Australia. (Introduced.)

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ATRACTOCERUS. Palisot de Beauvois.

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Family. CUPESIDÆ.

OMMA. Newman.

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Family. PTINIDÆ.

PTINUS. Linne.

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Family. CIOIDÆ.

LYCTUS. Fabricius.

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BOSTRYCHUS. Geoffroy.

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3929 **Westwoodi** F. Bates. Trans. Ent. Soc. Lond. 1873, p. 358.
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CTIMENE. F. Bates.

3930 **Breweri** F. Bates. Trans. Ent. Soc. Lond. 1873, p. 360.
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S. Australia.

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N. S. Wales, and Queensland.

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FORMICOMUS. Laferté.

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4295 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 307.
Gayndah, Queensland.

4296 MONILIS King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 18.
Gawler, and Port Lincoln, S. Australia.

4297 MYRTEUS King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 14,
N. S. Wales, and S. Australia.

4298 NIGRICOLLIS King. Trans. Ent. Soc. N. S. Wales, II. 1869. p. 21.
Gawler, S. Australia.

4299 NITIDISSIMUS King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 11.
Gawler, S. Australia.

4300 PALLIDUS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 307.
Gayndah, Queensland.

4301 PROPINQUUS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 307.
Gayndah, Queensland.

4302 PULCHER King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 12.
Gawler, S. Australia; Gayndah, Queensland.

4303 RARUS King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 22.
Parramatta, N. S. Wales.

4304 SCYDMÆNOIDES King. Trans. Ent. Soc. N. S. Wales, II., 1869, p. 16.
N. S. Wales.

4305 STRICTUS Erich. Wiegm. Arch. 1842, I. p. 182; Laf. Mon. Anth. p. 278; King, Trans. Ent. Soc. N. S. Wales, II. 1869, p. 12.
Tasmania.

4306 UNIFASCIATUS King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 13.
Gawler, S. Australia.

4307 WOLLASTONI King. Trans. Ent. Soc. N. S. Wales, II. 1869, p. 22.
Gawler, S. Australia.

Family. PYROCHROIDÆ.

LEMODES. Boheman.

4308 ATRICOLLIS Oberthür. Col. Novitates, I. p. 63 (1884).
Western Bay, Victoria.

4309 COCCINEA Bohem. Res. Eugen. p. 103, t. 2, f. 2, a-f; Lacord. Gen. Col. V. p. 604, nota.
Victoria; N. S. Wales; Queensland.

4310 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 308.
Gayndah, Queensland.

Family. MORDELLIDÆ.

MORDELLA. Linné.

4311 ABDOMINALIS Blessig. Hor. Soc. Ent. Ross. I. 1861, p. 113, t. 3, f. 3.
Victoria.

4312 ALBOSPARSA Gemming. Col. Heft. VI. 1870.
albosignata Bohem. Res. Eugen. 1858, p. 108.
N. S. Wales.

4313 ATERRIMA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 309.
Gayndah, Queensland.

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N. S. Wales and Queensland.

4315 BELLA C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 230.
S. Australia.

4316 BRUNEIPENNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 309.
Gayndah, Queensland.

4317 COMMUNIS C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 231.
N. W. Australia and Tasmania.

4318 CUSPIDATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 309.
Gayndah, Queensland.

4319 ELEGANS C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 231.
S. Australia.

4320 EXILIS Germ. Linn. Ent. III. 1848, p. 203.
S. Australia.

4321 FELIX C. O. Waterh. Ann. Nat. Hist. 1877, (4), XIX. p. 256.
Tasmania.

4322 HUMERALIS C. O. Waterh Trans. Ent. Soc. Lond. 1878, p. 235.
S. Australia.

4323 LEPIDA Redtenb. Reis. Novar. II. 1868, p. 141.
N. S. Wales.

4324 LEUCOSTICTA Germ. Linn. Ent. III. 1848, p. 203.
N. S. Wales, Victoria, and S. Australia.

4325 LIMBATA C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 235.
Sydney.

4326 14-MACULATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 308.
Gayndah, Queensland.

4327 MULTIGUTTATA C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 230.
Moreton Bay, Queensland.

4328 OBLIQUA C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 236.
S. Australia.

4329 OCTOMACULATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 308.
Gayndah, Queensland.

4330 ORNATA C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 233.
N. W. Australia.

4331 PROMISCUA Erichs. Wiegm. Arch. 1842, I. p. 181.
Tasmania.

4332 RUFICOLLIS C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 234.
Tasmania.

4333 TOMENTOSA Boisd. Voy. Astrol. II. p. 290; Dej. Cat. 3 ed. p. 241.
Australia.

4334 TRIVIALIS C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 232.
S. Australia.

TOMOXIA. Costa.

4335 FLAVICANS C. O. Waterh. Trans. Ent. Soc. Lond. 1878, p. 229.
Clarence River, N. S. Wales.

Family. RHIPIDOPHORIDÆ.

PELECOTOMOIDES. Castelnau.

4336 CONICOLLIS Casteln. Hist. Nat. II. p. 263; Lacord. Gen. Col. V. p. 623, nota 1.
N. S. Wales and Victoria.

4337 GERSTACKERI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310.
Gayndah, Queensland.

4338 LUTEA Gerstäck. (Trigonodera.) Mon. Rhipiphorid. Berlin, 1855, p. 7.
N. S. Wales.

4339 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310.
Gayndah, Queensland.

4340 NUDA Gerstäck. (Trigonodera.) Mon. Rhipiphorid. Berlin, 1855, p. 4.
Australia.

4341 SENILIS Gerstäck. (Trigonodera.) Mon. Rhipiphorid. Berlin, 1855, p. 6.
Australia.

4342 SERICEA Gerstäck. (Trigonodera.) Mon. Rhipiphorid. Berlin, 1855, p. 7.
Victoria.

EUCTENIA. Gerstäcker.

4343 SERICEA Gerstäck. Mon. 1855, p. 11, f. 6.
N. S. Wales.

EVANIOCERA. Guérin.

4344 GERSTACKERI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310.
Gayndah, Queensland.

4345 NERVOSA Gerstäck. (Ptilophorus.) Mon. 1855, p. 12.
Australia.

4346 PRUINOSA Gerstäck. (Ptilophorus.) Mon. 1855, p. 12.
N. S. Wales.

EMENADIA. Castelnau.

4347 LUTEIPENNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310.
Gayndah, Queensland.

4348 MACULICOLLIS Bohem. Res. Eugen. 1858, p. 107.
N. S. Wales.

4349 NOVÆ-HOLLANDIÆ Gerstäck. Mon. 1855, p. 24.
S. Australia.

4350 SOBRINA C. O. Waterh. Ann. Nat. Hist. (5), XI. 1883, p. 281.
Melbourne, Victoria.

4351 TRICOLOR Gerstäck. Mon. 1855, p. 28; C. O. Waterh. Ann. Nat. Hist. (5), XI. 1883, p. 280.
South, and W Australia.

NEPHRITES. Shuckhard.

4352 NITIDUS Shuck. Ent. Mag. V. 1838, p. 513.
Tasmania.

Family. CANTHARIDÆ.

CANTHARIS. Linné.

4353 POSTICALIS Fairm. Le Nat. 1879, I. p. 46.
Queensland.

PALAESTRA. Castelnau.

4354 EUCERA Fairm. Pet. Nouv. 1877, II. p. 167; Journ. Mus. Godeffr. XIV. 1879, p. 111; Stett. Ent. Zeit. 1880, p. 280.
Gayndah, Queensland.

4355 PLATYCERA Fairm. Stett. Ent. Zeit. 1880, p. 280
W. Australia.

4356 QUADRIFOVEATA Fairm. Stett. Ent. Zeit. 1880, p. 281.
Eastern Creek, N. S. Wales.

4357 RUBRIPENNIS Casteln. Hist. Nat. II. p. 251; Lacord. Gen. Atl. t. 60, f. 3; Fairm. Stett. Ent. Zeit. 1880, p. 280.
N. S. Wales and Victoria.

4358 RUFOCINCTA Fairm. Stett. Ent. Zeit. 1880, p. 281.
W. Australia.

TMESIDERA. Westwood.

4359 ASSIMILIS Hope. Proc. Ent. Soc. 1842, p. 71; Trans. Ent. Soc. IV. 1845, p. 103; Fairm. Stett. Ent. Zeit. 1880, p. 279.
S. Australia.

4360 RUBRICOLLIS Hope. Proc. Ent. Soc. 1842, p. 71; Trans. Ent. Soc. IV. 1845, p. 104; Fairm. Stett. Ent. Zeit. 1880, p. 274.
S. Australia.

4361 RUFIPENNIS Westw. Mag. Zool. 1841, p. 85; Lacord. Gen. Col. V. p. 685, nota 1; Fairm. Stett. Ent. Zeit. 1880, p. 279.
N. S. Wales.

4362 VIOLACEA Hope. Proc. Ent. Soc. 1842, p. 71; Trans. Ent. Soc. IV. p. 103; Fairm. Stett. Ent. Zeit. 1880, p. 279.
S. Australia.

ZONITIS. Fabricius.

4363 ÆNEIVENTRIS Redtenb. Reis. Novar. II. 1868, p. 144.
N. S. Wales.

4364 ANNULATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 311; Fairm. Stett. Ent. Zeit. 1880, p. 268.
Gayndah, Queensland.

4365 APICALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 311; Fairm. Stett. Ent. Zeit. 1880, p. 268.
Gayndah, Queensland.

4366 BIPARTITA Fairm. Le Nat. 1879, I. p. 46; Stett. Ent. Zeit. 1880, p. 268.
Sydney, N. S. Wales.

4367 BIZONATA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 311 ; Fairm. Stett. Ent. Zeit. 1880, p. 267.
Gayndah, &c., Queensland.

4368 CYANIPENNIS Pascoe. Journ. of Ent. I. 1860, p. 57, t. 3, f. 5 ; Fairm. Stett. Ent. Zeit. 1880, p. 271.
Victoria.

4369 CYLINDRACEA Fairm. Stett. Ent. Zeit. 1880, p. 270.
Richmond River, N. S. Wales.

4370 DICHROA Germ. Linn. Ent. III. 1848, p. 204 ; Fairm. Stett. Ent. Zeit. 1880, p. 263.
S. Australia.

4371 FLAVICEPS C. O. Waterh. Cist. Ent. II. 1875, p. 54 ; Fairm. Stett. Ent. Zeit. 1880, p. 266.
Swan River, W. Australia.

4372 FLAVICRUS Fairm. Stett. Ent. Zeit. 1880 p. 274.
Australia.

4373 FUSCICORNIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310.
Gayndah, Queensland.

4374 INGIGACEA Fairm. Stett. Ent. Zeit. 1880, p. 276.
Champion Bay, W. Australia.

4375 JANTHINIPENNIS Fairm. Stett. Ent. Zeit. 1880, p. 277.
Champion Bay, W. Australia.

4376 LIMBIPENNIS Fairm. Stett. Ent. Zeit. 1880, p. 265.
Swan River, W. Australia.

4377 LUTEA Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 310 ; Fairm. Stett. Ent. Zeit. 1880, p. 262.
Gayndah, Queensland.

4378 NIGRO-ÆNEA Fairm. Le Nat. 1879, I. p. 46 ; Stett. Ent. Zeit. 1880, p. 276.
South, and W. Australia.

4379 NIGROAPICATA Fairm. Stett. Ent. Zeit. 1880, p. 264.
Rockhampton, Queensland.

4380 NIGROPLAGIATA Fairm. Stett. Ent. Zeit. 1880, p. 271.
Gantheaume Bay, W. Australia.

4381 OBSCURIPES Fairm. Le Nat. 1879, I. p. 46; Stett. Ent. Zeit. 1880, p. 262.
Peak Downs, Queensland.

4382 OPACORUFA Fairm. Stett. Ent. Zeit. 1880, p. 269.
Adelaide, S. Australia.

4383 PALLICOLOR Fairm. Stett. Ent. Zeit. 1880, p. 264.
W. Australia.

4384 PURPUREIPENNIS C. O. Waterh. Cist. Ent. II. 1875, p. 54; Fairm. Stett. Ent. Zeit. 1880, p. 278.
Gantheaume Bay, W. Australia.

4385 ROSTRATA Blessig. Hor. Soc. Ent. Ross. 1861, p. 114, t. 3, f. 5, a-b; Fairm. Stett. Ent. Zeit. 1880, p. 273.
N. S. Wales; Victoria; S. Australia.

4386 RUGATA Fairm. Stett. Ent. Zeit. 1880, p. 275.
Swan River, W. Australia.

4387 RUGOSIPENNIS Fairm. Le Nat. 1879, 1. p. 46; Stett. Ent. Zeit. 1880, p. 273.
Australia.

4388 SEDILLOTI Fairm. Stett. Ent. Zeit. 1880, p. 277.
Gantheaume Bay, W. Australia.

4389 SEMINIGRA Fairm. Le Nat. 1879, I. p. 46; Stett. Ent. Zeit. 1880, p. 265.
Swan River, W. Australia.

4390 SEMIRUFA Fairm. Stett. Ent. Zeit. 1880, p. 274.
W. Australia.

4391 SPLENDIDA Fairm. Le Nat. 1879, I. p. 46; Stett. Ent. Zeit. 1880, p. 267.
King George's Sound, W. Australia.

4392 TENUICORNIS Fairm. Stett. Ent. Zeit. 1880, p. 269.
N. S. Wales, and Victoria.

4393 TRICOLOR Le Guillou. Rev. Zool. 1844, p. 225; Fairm. Stett. Ent. Zeit. 1880, p. 266.

Tasmania, N. S. Wales, and S. Australia.

4394 VENTRALIS Fairm. Stett. Ent. Zeit. 1880, p. 272.
Australia.

4395 VIOLACEIPENNIS C. O. Waterh. Cist. Ent. II. 1875, p. 54; Fairm. Stett. Ent. Zeit. 1880, p. 278.

Swan River, W. Australia.

PALESTRIDA. White.

4396 BICOLOR White. Stokes Discov. p. 509; Lacord. Gen. Col. V. p. 687.
King George's Sound, W. Australia.

SITARIDA. White.

4397 HOPEI White. Stokes Discov. I. p. 508, t. 2, f. 2.
King George's Sound, W. Australia.

GOETYMES. Pascoe.

4398 FLAVICORNIS Pascoe. Journ. of Ent. II. 1863, p. 48, t. 2, f. 5.
N. S. Wales, and Queensland.

Family. ŒDEMERIDÆ.

SELENOPALPUS. White.

4399 CYANEUS Fabr. Syst. Ent. p. 125; Oliv. Ent. III. 50, p. 7, t. 1, f. 5.

Australia.

4400 FUSCUS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 311.
Gayndah, Queensland.

4401 MASTERSI Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 312.
Gayndah, Queensland.

ANANCA. Fairmaire et Germain.

4402 AUSTRALIS Boisd. Voy. Astrol. II. 1835, p. 295; Dej. Cat. 3 ed. p. 250.
rubricollis Lacord. Dej. Cat. 3 ed. p. 250.
Australia.

4403 BIVITTATA Boisd. Voy. Astrol. II. p. 294; W. S. Macleay, Dej. Cat. 3 ed. p. 250.
Australia.

4404 BREVICORNIS Boisd. Voy. Astrol. II. p. 295; Latr. Dej. Cat. 3 ed. p. 250.
Australia.

4405 LUCTUOSA Boisd. Voy. Astrol. II. p. 295; Eschsch. Dej. Cat. 3 ed. p. 250.
Australia.

4406 NIGRONOTATA Bohem. Res. Eugen. 1858, p. 110.
N. S. Wales and Victoria.

4407 PUNCTA W. S. Macleay. King's Survey, II. 1827, p. 443.
palliata Dej. Cat. 3 ed. p. 250.
suturalis Latr. Dej. Cat. 3 ed. p. 250.
N. S. Wales.

4408 RUFICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 312.
Gayndah, Queensland.

4409 VITTICOLLIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 312.
Gayndah, Queensland.

PSEUDOLYCHUS. Guérin.

4410 APICALIS Macleay. Trans. Ent. Soc. N. S. Wales, II. 1872, p. 313.
Gayndah, Queensland.

4411 ATRATUS Guér. Ann. Soc. Ent. Fr. 1833, p. 158.
King's Island, Bass's Straits.

4412 CINCTUS Guér. Ann. Soc. Ent. Fr. 1833, p. 157.
Victoria and Tasmania.

4413 HÆMOPTERUS Guér. Ann. Soc. Ent. Fr. 1833, p. 158.
Victoria.

4414 HÆMORRHOIDALIS Fabr. Syst. El, II. p. 113.
Tasmania.

4415 MARGINATA Guér. Ann. Soc. Ent. Fr. 1833, p. 156, t. 7, a. f. 1-6 ; Lacord. Gen. Atl. t. 60, f. 1.
N. S. Wales and Victoria.

ISCHNOMERA. Stephens.

4416 MANSUETA Newm. Zoolog. App. IX. 1851, p. 132.
Australia.

DOHRNIA. Newman.

4417 MIRANDA Newm. Zoology, App. IX. 1851, p. 133 ; C. O. Waterh. Ent. Month. Mag. 1877, XIV. p. 23.
Australia

MISCELLANEA ENTOMOLOGICA.

No. I.—THE GENUS DIPHUCEPHALA.

By William Macleay, F.L.S., &c.

It is now within a few months of thirteen years, since I published in the Transactions of the Entomological Society of New South Wales, a paper under the above title. I adopt the same prefix now, because my intention and objects are the same as on that occasion. It was my wish then as now, to describe from time to time such new or little known species of insects as I came across in my collection, and, to render such descriptions more interesting and instructive to the Entomologist, to accompany them with a review or revision of the genus or group to which each species belongs.

In this as in the previous paper, I shall not take my subjects in any classified order but shall pass from one to another, as I find most suitable to my studies. I begin with the very attractive and distinctly Australian Group of the *Melolonthidæ*, comprised in the genus *Diphucephala* of Serville.

A very complete and excellent monograph of the genus, from the pen of G. R. Waterhouse, was published in the year 1835, in the first Volume of the Transactions of the Entomological Society of London. At that time only 16 species were known, since then 7 species have been added—2 by Blanchard, 2 by Burmeister, and 3 by myself. The present paper adds 20 to the number, so that a short revision of the group seems to me now to be not merely excusable but very necessary.

My original intention was to give merely references to the species previously described, but finding the number of new species to be described so large, it seemed to me that it would be a matter of convenience to those interested in the subject, and who are perhaps far removed from access to books, to make the monograph complete, by including the descriptions of all the species.

Lacordaire in his "Genres des Coléoptères" places *Diphucephala* in his Sub-Tribe Sericides which he characterizes thus:—"*Melolonthidæ* having the labium soldered to the mentum, mandibles prolonged on their internal face into a large thin plate. Labrum none or not separable from the clypeus. Abdominal segments not soldered together."

The Sub-Tribe (Sericides) is represented in Australia by three very distinct and characteristic groups. 1. The *Phyllotocides*, a group which I monographed in the Transactions of the Ent. Soc. of New South Wales in the year 1863. 2. The *Diphucephalides* the group now under consideration and 3. The *Mæchidiides*, which includes all insects referable to the genus *Mæchidius* of W. S. Macleay.

The second of these groups is thus characterized by Lacordaire:—"Labium corneous, soldered to the mentum. Outer lobe of the maxillæ toothed. Clypeus double. Posterior coxæ narrow. Metasternum cut squarely behind."

The following is a translation of Lacordaire's definition of the

Genus, DIPHUCEPHALA.

Mentum flat or convex, narrowed at the base, slightly rounded, truncate or slightly emarginate in front.

Maxillæ robust, the external lobe armed with 5 or 6 teeth.

Palpi very short, the last joint of the labial obconic, that of the maxillary oval, more or less thick.

Head moderately long, flat; clypeus large; nearly square, separated from the forehead by a fine suture, varying in the sexes, emarginate in front.

Eyes moderate.

Antennæ short, of eight joints: 1st long, swelled at the apex, 2nd nearly as long, obconic, 3rd short, 4th elongate and compressed, 5th very short, the three last forming an oblong mass in the males, oval in the females.

Thorax of varying length, more or less angular on the sides, sinuate or truncate at the base, often grooved or foveate on the disk.

Scutellum of curvilinear triangular form, very sharp at the extremity.

Elytra of an oblong square form, rounded with a perpendicular border at the apex.

Legs rather long; the anterior tibiæ bi- or uni-dentate at their extremities without terminal spur, the four posterior ciliated or velvety; tarsi of variable length, the three or four first joints of the anterior and two or three first of the intermediate dilated in the males and clothed with long hairs, the claws robust, cleft at the summit.

Pygidium perpendicular, of variable form and size.

All are insects of small size and for the most part of intense metallic brilliancy of colouring. The larvæ are unknown, the perfect insects live, some on leaves, others on the petals of flowers. They are found in all parts of Australia, but the Coast Districts of New South Wales and Southern Queensland seems to be by far the most rich in species. Some species have been observed to become occasionally so numerous on their food plants as to be destructive, but such cases I believe to be very rare.

The following synopsis of the species ranged under the most prominent distinctive features in the genus, will I think simplify the identification of the species, and may save the investigator much of the time which would be spent in referring to long descriptions.

SECTION I.

Legs reddish, not metallic.

Diphucephala sericea, Kirby.
,, rufipes, Waterh.
,, lineata, Boisd.
,, Richmondia, n. sp.
,, nitidicollis, n. sp.
Diphucephala obscura, n. sp.
,, ignota, n. sp.
,, minima, n. sp.
,, nitens, n. sp.
,, pubescens, n. sp.
Diphucephala hirtipennis, Macleay.

SECTION II.

Legs of metallic lustre.

SUB-SECTION A.

Emargination of clypeus in the male deep, the angles not or scarcely diverging.

Diphucephala Childrenii, Waterh. Diphucephala affinis, Waterh.
„ furcata, Guér. „ Edwardsi, Waterh.
Diphucephala beryllina, Burm.

SUB-SECTION B.

Emargination of clypeus more or less deep, the angles always diverging.

Dorsal channel of thorax single. Lateral foveæ not reaching the dorsal channel.	Diphucephala colaspidoides, Gyllenh.
	„ rugosa, Boisd.
	„ castanoptera, Waterh.
	„ cœrulea, Macl.
	„ latipennis, Macl.
	„ Mastersi, n. sp.
	„ Barnardi, n. sp.
	„ laticeps, n. sp.
	„ cuprea, n. sp.
	„ humeralis, n. sp.
	„ Waterhousei, Burm.
	„ quadritigera, Blanch.
	„ angusticeps, n. sp.
	„ azureipennis, n. sp.
Dorsal channel of thorax single. Lateral foveæ extending across the dorsal channel.	„ pulchella. Waterh.
	„ aurolimbata, Blanch.
	„ smaragdula, Boisd.
	„ prasina, n. sp.
Dorsal channel of thorax double at the base.	„ aurulenta, Kirby.
	„ parvula, Waterh.
	„ purpureitarsis, n. sp.
	„ obsoleta, n. sp.
	„ pygmæa, Waterh.
	„ lateralis, n. sp.

SECTION I.

Legs reddish, not metallic.

1. Diphucephala sericea, Kirby.

Linn. Soc. Trans. Lond. XII. p. 463; Waterh. Trans. Ent. Soc. Lond. I. p. 217, pl. 22, fig. 1; Burm. Handb. IV. 2, p. 114; Blanch. Cat. Mus. Paris, p. 98; *D. viridis*, Sturm. Cat. 1826, p. 204.

Head and thorax green and subopaque, densely and very minutely punctate, and densely clothed with a short decumbent pile; the latter almost obsoletely canaliculate in the middle, and slightly foveate and angled on the sides. Scutellum smooth, depressed in the middle. Elytra bluish-green, sericeous, lightly rugose-punctate, with two slightly elevated ridges on each and clothed thinly with rows of a decumbent ashen pile. Under surface more densely pilose than the upper, the pygidium large, rather convex, of a brilliant green with whitish pile, the penultimate segment with a fringe of long hairs. The legs are red, the tarsi rather darker, and clothed with whitish hairs, the fore tibiæ are triangularly ridged and have two short bluntish teeth slightly recurved and close together on the outer apex, and the intermediate have two acute spines on the inner apex.

Length, 4½ lines.

Hab.—Coast Districts of New South Wales, generally frequenting Acacia trees.

2. Diphucephala rufipes, Waterh.

Trans. Ent. Soc. Lond. I. p. 225; Burm. Handb. IV. p. 115.

Of a brilliant green with red legs. Head and thorax very minutely and densely punctate, with a very short pubescence, the clypeus of the male moderately emarginate and reflexed with the angles not acutely pointed. The thorax has the dorsal channel narrow and the lateral foveæ small. Scutellum smooth and triangular. Elytra rugosely punctate, two very slightly raised lines on each elytron. The under surface is densely covered with white pubescence. The pygidium is very large. The fore tibiæ are rather minutely bidentate on the outer apex, the intermediate minutely spurred on the inner apex, and the posterior are brown on the apical half.

Length, 3 lines.

Hab.—New South Wales.

3. DIPHUCEPHALA LINEATA, Boisd.

Voy. Astrol. Col., p. 202; *D. pilistriata,* Waterh., Trans. Ent. Soc., Lond., I., p. 21.

Green, nitid, clothed rather thinly with white decumbent pile above and below; that on the elytra being disposed in rows. The clypeus is only slightly emarginate; the thorax is sparsely punctate, the lateral foveæ very large and deep, extending to the dorsal channel which is large and wide. Scutellum smooth, of curvilinear triangular form. Elytra punctate in irregular rows. Legs entirely red, the fore tibiæ strongly bidentated, the terminal tooth considerably recurved, the intermediate and posterior tibiæ spurred on the inner apex.

Length, 3¼ lines.

Hab.—New South Wales?

The specimens of this insect in the Macleayan Museum have no locality affixed to them, and I have never seen it elsewhere.

4. DIPHUCEPHALA RICHMONDIA, n. sp.

Very like *D. lineata,* but much larger. The head is bright metallic green, punctured in front and smooth behind; with a shallow impression between the eyes and a transverse one on the vertex; the clypeus is broad, sharply angled and recurved on sides and angle. The thorax is of a brilliant metallic green, more thinly pilose than *D. lineata,* and with the dorsal and transverse channels deeper and more continuous. Scutellum smooth and a little depressed in the middle. The elytra are of a ruddy metallic hue, roughly and densely punctate with rows of decumbent pile as in *D. lineata.* The abdomen less pilose than in that species. Legs red. Fore tibiæ bluntly bidentate.

Length, 4 lines.

Hab.—Richmond River.

5. DIPHUCEPHALA NITIDICOLLIS, n. sp.

Metallic green, legs pale red; the whole body clothed rather thinly with a short ashen pile. Head minutely and densely punctate, broad, and vertical, with the clypeus broadly but not deeply emarginate at the apex which is slightly wider than the base, and the angles recurved and rounded. The thorax has a somewhat coppery tinge and is densely and minutely punctate, the dorsal channel is broad but not deep, the lateral foveæ are deep but do not form a continuous transverse depression, and the sides are acutely angled at the lateral fovea.

The elytra are rugose and coarsely and rather transversely punctate with two almost obsolete costæ on each elytron. The pygidium is large, the apex smooth and of a coppery lustre. The upper tooth of the fore tibiæ minute and near the other.

Length, 3½ lines.

Hab.—Illawarra.

6. DIPHUCEPHALA OBSCURA, n. sp.

This species resembles *D. nitidicollis* in many respects, but it is more pilose and coarsely punctate. The head has the median line on the forehead just traceable, the suture of the clypeus is visible and slightly sinuate in the middle, the suture of the proclypeus forms in the middle a short transverse ridge, the apex is slightly emarginate and the angles are very slightly reflexed. The thorax has the dorsal channel large, depressed in the middle, and the transverse depression extends right across from one lateral fovea to the other.

Length, 4 lines.

Hab.—New South Wales.

7. DIPHUCEPHALA IGNOTA, n. sp.

Coppery-red on the upper surface, dark metallic-green beneath. Legs red. Sparingly pilose all over. Head punctate, the clypeus slightly emarginate, the angles slightly reflexed and somewhat truncate, the suture of the proclypeus forms a semi-circular transverse ridge; a deep groove extends along the vertex from one eye to the other. The thorax is rugosely punctate, the dorsal channel is deep but narrow, the transverse depressions large and deep, but not quite joined in the middle. A depression and a few small punctures on the scutellum. The elytra are coarsely but rather regularly punctate, with a tolerably distinct callus at the apical declivity. The under surface is very nitid and very sparingly pilose.

Length, 3 lines.

Hab.—New South Wales.

One very defective specimen of this species is all I have seen, and I have no idea what part of the country it came from.

8. DIPHUCEPHALA MINIMA, n. sp.

This at first sight might possibly be mistaken for a very small specimen of *D. rufipes*; it is, however, very distinct. Colour entirely metallic-green with reddish legs. The head is small and punctate, the clypeus is triangularly emarginate with the angles rather acute and much reflexed. Thorax nearly as long as wide, the anterior angles acute, the middle of each side distinctly angular, the lateral foveæ deep but scarcely meeting in the middle, and the dorsal channel formed of a very faint ridge with a broad depression on each side. The scutellum is depressed in the middle and of a slight coppery hue. The elytra are coarsely punctate in tolerably regular rows, and are without vestige of longitudinal costæ. The under surface is more densely pilose than the upper. Tibiæ not bidentate.

Length, 2 lines.

Hab.—Currajong. One specimen, Macl. Mus.

9. DIPHUCEPHALA NITENS, n. sp.

Of short robust form. Metallic-green with red legs, the pubescence, both above and beneath, extremely short, and not dense. Head and clypeus densely and finely punctate, the latter scarcely emarginate or reflexed. Thorax finely punctate, the disk very nitid and of a golden-red, the sides not angled, the dorsal channel straight and narrow and the lateral foveæ small. Scutellum smooth and of a brilliant coppery lustre. Elytra green on the disk and golden or coppery-red on the sides, densely and coarsely punctate in irregular rows, with two of the interstices and the suture on each elytron forming smooth costæ. The legs are strong and of a pale red colour, the fore tibiæ are strongly bidentated externally, the intermediate unidentate, and both the tarsi and extremities of the tibiæ in the four posterior legs are brown.

Length, 2½ lines.

Hab.—Endeavour River.

10. DIPHUCEPHALA PUBESCENS, n. sp.

Green, the whole upper surface densely and equally clothed with a short yellowish decumbent pubesence, the under surface still more densely covered with a white decumbent pubescence. Clypeus slightly emarginate and reflexed. Dorsal channel of thorax broad and shallow on its posterior half, the lateral foveæ small. Scutellum smooth. Pygidium large, glabrous at the apex. Legs red, fore tibiæ bidentate.

Length, 2¾ lines.

Hab. Queensland.

11. DIPHUCEPHALA HIRTIPENNIS, Macl.

Proc. Linn. Soc. N. S. Wales, VIII. p. 415.

Hab.—Queensland.

The type of this species is in the Brisbane Museum, and so far as I know nowhere else. As it was originally described in the Publications of this Society, I avoid repeating the description.

SECTION II.

Legs of metallic lustre.

SUB-SECTION A.

Emargination of clypeus in the male deep, the angles not or scarcely diverging.

12. DIPHUCEPHALA CHILDRENII, Waterh.

Trans. Ent. Soc. Lond. I. p. 222 ; Burm. Handb. IV. p. 115.

Of a general sericeous appearance ; the head and thorax are of a dull golden-green colour, the elytra are of a dull green margined with golden-green. The thorax is very minutely punctate, the dorsal channel light and narrow, the lateral foveæ small. The scutellum is smooth and longitudinally impressed in the middle. The puncturation of the elytra is of the same character as in the other species but more obliterate. The under surface is thinly clothed with decumbent pubescence, the fore tibiæ are bidentate, the teeth distant, the tarsi are cyaneous. The clypeus of the male is deeply emarginate, the angles slightly approaching in front.

Length, 5 lines.

Hab.—West Australia.

13. DIPHUCEPHALA FURCATA, Guér.

Voy. Coquille, II. p. 89 ; Règn. Anim. t. 24, fig. 13 ; *D. acanthopus*, Boisd. Voy. Astrol Col. p. 202 ; *D. Hopei*, Waterh. Trans. Ent. Soc. Lond. I. fig. 219 ; Burm. Handb. IV. p. 119.

This species resembles *D. Childrenii* in many respects. The head and thorax are very densely and extremely minutely punctate like shagreen, the latter slightly marked as in *D. Childrenii.* The scutellum is also similar, the elytra differ in being nitid and deeply punctate, the under surface is thinly pubescent, and the segments of the abdomen are furnished with frills of long hair. The legs are coppery, the tarsi cyaneous, the fore tibiæ without the upper tooth on the outside but all the tibiæ have a short strong tooth on the inner apex. The clypeus of the males as in *D. Childrenii.*

Length, 5 lines.

Hab.—West Australia.

14. DIPHUCEPHALA AFFINIS, Waterh.

Trans. Ent. Soc. Lond. I. p. 219.

This species differs from *D. furcata* in being entirely of a nitid metallic-green, the under surface only being clothed with decumbent pile. The thorax is distinctly but thinly punctured in the female, less so in the males, the dorsal channel and lateral foveæ lightly marked. The bidentation of the anterior tibiæ is very slight, and the teeth are distant. In all other respects the resemblance to *D. furcata* is complete.

Length, 4½ lines.

Hab.—West Australia.

15. DIPHUCEPHALA EDWARDSI, Waterh.

Trans. Ent. Soc. Lond. I. p. 220; Burm. Handb. IV. p. 121.

Entirely of a golden-green colour, and not very nitid. Head and thorax minutely and rugosely punctate, the latter having the dorsal channel and lateral foveæ very shallow. Scutellum minutely punctate. Elytra coarsely punctate in irregular rows, the punctures becoming effaced at the apex. The under surface is thinly clothed with decumbent pile, the pygidium very sparingly. Tarsi cyaneous, anterior tibiæ bidentate externally, all the tibiæ armed with a short triangular spur on the inner apex. The clypeus of the male is deeply emarginate, but the angles diverge slightly, showing an approach to the next group.

Length, 4 lines.

Hab.—West Australia.

16. DIPHUCEPHALA BERYLLINA, Burm.

Handb. IV. p. 121.

Brassy-green, with the head, apical portion of the thorax, and the external margin of the elytra of a coppery-golden lustre, beneath with white pubescence, the fore tibiæ not bidentate.

Length, 4 lines.

Hab.—Swan River.

This is the description given by Burmeister of this species, and I cannot improve on it, as I have never been able to recognise it with certainty. I have, however, seen at the Australian Museum a specimen from Mt. Barker, near King George's Sound, which resembles the description, and is, I think, very likely to be the very species; if so it undoubtedly belongs to my Sub-section A.

SUB-SECTION B.

Emargination of clypeus, more or less deep, the angles always diverging.

1. Dorsal channel of thorax single, lateral foveæ not reaching the dorsal channel.

17. DIPHUCEPHALA COLASPIDOIDES, Gyllenh.

Schonh. Syn. Ins. 1-3 App. p. 101; *D. lineatocollis*, Boisd. Voy. Astrol. Col. p. 201; *D. splendens*, W. S. Macl. King's Surv. p. 440; Waterh. Trans. Ent. Soc. Lond. 1. p. 220; Burm. Handb. IV. p. 121; *D. pubiventris*, Burm. Handb. IV. p. 119.

Brilliant bluish-green, covered beneath with whitish pubescence. Head densely punctate in front, smooth on the occiput, the suture of the clypeus distinct, and a little arched, the suture of the proclypeus forming a short semi-circular transverse raised line, and the apex moderately emarginate, the angles round and reflexed. Thorax thinly punctate, the dorsal channel narrow, the lateral foveæ rather large and the lateral margin reddish-pilose. Scutellum triangular, smooth. Elytra coarsely and sub-transversely punctate. Pygidium large, with a frill of long hairs at the apex. The legs green, hairy, the fore tibiæ bidentate, the teeth reddish, a strong curved spur at the apex of the hind tibiæ of the male.

Length, 4 lines.

Hab.—Victoria, Tasmania and S. Australia.

18. DIPHUCEPHALA RUGOSA, Boisd.

Voy. Astrol. Col. p. 204; Dej. Cat. 3, p. 108; *D. Spencei*, Waterh. Trans. Ent. Soc. Lond. I. p. 224; Burm. Handb. IV. p. 116.

Of short broad form, coppery-green colour, and sparingly clothed above and beneath with decumbent white pile. Head punctate, the clypeus of the males slightly emarginate and reflexed, the angles not acute. The thorax is covered with large variolous-looking punctures, the dorsal channel is scarcely visible except on the basal portion, the lateral foveæ are deep but do not reach the middle, and the anterior angles are acute. The scutellum is depressed behind and very minutely punctate. The elytra are coarsely and densely punctate. The pygidium is convex, rounded and glabrous at the apex. The legs are green, the tarsi cyaneous, the fore tibiæ bidentate, the teeth reddish.

Length, 2½ lines.

Hab.—New South Wales.

Common about Sydney on flowers of *Dillwynia*.

19. Diphucephala castanoptera, Waterh.

Trans. Ent. Soc. Lond. I. p. 222; Burm. Handb., IV., p. 117.

This is the only species I know with non-metallic elytra. The head is punctate and of a golden-green, the clypeus lightly emarginate and reflexed and of a cyaneous-green, the thorax is pilose, of a golden-green, and rather sparingly punctate, the dorsal channel very broad on the basal half, and the lateral foveæ also large. Scutellum green, smooth, in form of a curvilinear triangle. Elytra reddish-chesnut sparingly pilose and punctate in tolerably regular rows. Anterior tibiæ strongly bidentate.

Length, 3½ lines.

Hab.—Port Macquarie.

20. Diphucephala cœrulea, Macl.

Proc. Linn. Soc. N. S. Wales, VIII. p. 415.

Hab.—Queensland.

Description omitted because previously printed in Society's Proceedings.

21. DIPHUCEPHALA LATIPENNIS, Macl.

Proc. Linn. Soc. N. S. Wales, VIII. p. 415.

Hab.—Queensland.

Description omitted for same reason as last species.

22. DIPHUCEPHALA MASTERSI, n. sp:

Of broad convex form, the upper surface excepting the scutellum entirely of a reddish coppery lustre, rather thickly clothed with decumbent whitish pile. The head is small, the clypeus rather deeply emarginate, narrow, the angles diverging, rounded and reflexed. Thorax moderately punctate, the dorsal channel lightly impressed, and the lateral foveæ not large. Scutellum golden-green, smooth, longitudinally impressed in the middle. Elytra rugosely but not deeply punctate. Under surface green, pilose, pygidium pointed, very hairy. Legs green, tarsi cyaneous, fore tibiæ not bidentate.

Length, 5 lines.

Hab.—King George's Sound.

23. DIPHUCEPHALA BARNARDI, n. sp.

Nitid metallic-green with an occasional bluish-green tinge, moderately pilose above, more densely beneath. Head densely punctate, the punctures on the clypeus more minute, a slight transverse depression from eye to eye across the vertex, the clypeus of the male rather deeply emarginate, the angles porrect, slightly reflexed and broadly rounded at the apex. The thorax is thinly punctate, the dorsal channel dilated ovally on the basal half, the lateral foveæ very deep and large, but not reaching the dorsal channel and the lateral angles prominent. The scutellum is triangularly rounded, with a depression in the middle towards the apex. The elytra are densely and rugosely punctate, with the pile apparently disposed in rows of single hairs, the female has the lateral margins behind broad and reflexed and a strong spine at the apex of each elytron. The legs are metallic-green, the anterior tibiæ bidentate, the teeth reddish—very minute in the male, rather strong in the female.

Length, 3½ lines.

Hab.—Dawson River.

I have named this species after George Barnard, Esq., of Coomooboolaroo, Upper Dawson, from whom I have received this this and many other rare and beautiful insects. The mucronate elytra of the females are the most distinguishing feature of this species.

24. DIPHUCEPHALA LATICEPS, n. sp.

Entirely metallic-green, moderately nitid, thinly pilose above, rather densely beneath. Head densely and finely punctate, clypeus broad, square, lightly emarginate in the male, the angles rounded on their internal face, and very slightly reflexed. Thorax thinly and minutely punctate, the dorsal channel rather lightly marked and broadest on the basal half, and the lateral foveæ deep, but not nearly reaching the middle. Scutellum smooth. Elytra rugosely punctate, the punctures somewhat smaller and more obliterate than in many of the species. The fore tibiæ are normally bidentate, the teeth and all the tarsi subcyaneous.

Length, 4½ lines.

Hab.—Illawarra, Coast Districts.

25. DIPHUCEPHALA CUPREA, n. sp.

Like *D. rugosa* but of less robust form, finer puncturation, and denser pubescence. It is of a semiopaque golden-green lustre, with the elytra coppery-red, the upper surface is thinly pilose, the under densely. The head is broad and finely punctate, flat, and sharply and shortly reflexed at the apex of the clypeus, the emargination slight. The thorax is punctate but less coarsely than in *D. rugosa*, the dorsal channel is distinct and widest behind, the lateral foveæ large but not very deep and the lateral angles well marked. Scutellum smooth, depressed in the middle, the sides a little rounded. Elytra transversely rugosely punctate. Pygidium rounded on the sides, convex, glabrous at the apex. Legs coppery-green, the fore tibiæ normally bidentate.

Length, 2¼ lines.

Hab.—Rockhampton.

26. DIPHUCEPHALA HUMERALIS, n. sp.

Dark metallic-green, upper surface minutely pilose, beneath densely. Head densely punctate, vertical surface quite flat, the emargination of the clypeus short and broad, the angles slightly reflexed, the suture of the proclypeus distinct. Thorax variolose-punctate, dorsal channel lightly impressed but rather broad, the lateral foveæ wide, and the lateral angle minute. Scutellum smooth. Elytra sharply rugose punctate, little wider than the thorax, in this resembling *D. rugosa,* with a narrow basal margin and the humeral angles of a reddish-purple or ruby colour. The fore tibiæ are not bidentate; the place of the upper tooth occupied only by a slight sinuosity.

Length, 2 lines.

Hab.—Illawarra.

27. DIPHUCEPHALA WATERHOUSEI, Burm.

Handb. IV. p. 122.

Green, subsericeous, with the base and apex of the elytra cyaneous, thorax scarcely canaliculate, scutellum very smooth, fore tibiæ bidentate. Male with the clypeus acutely angled but not bidendate, the female unknown.

Length, 3½ lines.

This species I have certainly never seen and no locality is given by Burmeister. Notwithstanding the very imperfect description it evidently comes within the conditions of this sub-division of sub-section B.

28. DIPHUCEPHALA QUADRITIGERA, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 100.

Entirely golden-green, above sparingly, beneath rather densely pilose. Head lightly impressed, very finely punctate; antennæ pitchy black, thorax brilliant green, the middle of a golden hue, punctate, the hind and middle foveæ almost square, the lateral foveæ deep. Elytra green with a golden hue chiefly on the sides, strongly punctate in series with two slightly elevated lines. Legs green with white hairs; tarsi cyaneous, the fore tibiæ bidentate.

Length, 2½ lines.

Hab.—New South Wales.

I cannot, from the above description of Blanchard's, make out the species with certainty, but if the insect I take to be it, is so, the description of the dorsal channel should be "basal half wider and somewhat quadrangular."

29. DIPHUCEPHALA ANGUSTICEPS, n. sp.

Green with a golden-green gloss, sparingly pilose above, densely beneath. Head rather narrow, short, densely and minutely punctate, the clypeus of the male reflexed and emarginate in front and pointed at the external angles. Thorax moderately punctate, the anterior and lateral angles acute, the dorsal channel wide, particularly on the basal half, the lateral foveæ large, deep, and extending almost to the middle. Scutellum a little depressed in the middle and minutely punctate. Elytra rugosely punctate. Under surface and legs of a bluish metallic-green, fore tibiæ bidentate.

Length, 2 lines.

Hab.—N. S. Wales.

30. DIPHUCEPHALA AZUREIPENNIS, n. sp.

Dark green, elytra greenish-blue, the upper surface rather thickly pilose, beneath densely so. Head almost smooth on the vertex, thickly punctate on the forehead, with an impression on each side near the eyes, the clypeus densely and minutely punctate, nearly square, and very slightly emarginate and reflexed in the male, Thorax thinly punctate except in the foveæ, the dorsal channel deep and widening to the base, the lateral foveæ large. Scutellum impressed in the centre and minutely punctate. Elytra rugosely punctate, with two slightly raised costæ on each side of the suture, and with the pile disposed in lines of single hairs. The fore tibiæ bidentate, the teeth small and rather distant; tarsi subcyaneous.

Length, 2¾ lines. Male specimen only.

Hab.—Mitchell's Exp. Vict. River.

2. Dorsal channel of the thorax single, lateral foveæ reaching the middle.

31. DIPHUCEPHALA PULCHELLA, Waterh.

Trans. Ent. Soc. Lond. I. p. 221.

Green or bluish, nitid, sparingly pilose. Head smooth on the vertex, densely and finely punctate in front, clypeus in the male very slightly emarginate and reflexed, the angles somewhat truncate. Thorax thinly punctate, the dorsal channel of an elongated oval form, the lateral foveæ large, extending in a shallow depression to the dorsal channel. Scutellum deeply foveated in the middle, smooth. Elytra coarsely and thickly punctuate. Fore tibiæ strongly bidentate, the teeth reddish.

Length, 3½ lines.

Hab.—Victoria and South Australia.

32. DIPHUCEPHALA AUROLIMBATA, Blanch.

Cat. Coll Ent. Mus. Paris, p. 99.

Smaller than *D. pulchella*, depressed, nitid, green, the middle of the thorax and the external limb of the elytra, of a brilliant golden hue; above almost glabrous, beneath with whitish pile. Head densely punctate; clypeus deeply forked, the angles spatuliform. Thorax strongly punctate, deeply and broadly sulcate in the middle, the lateral foveæ deep. Elytra flat, rugosely punctate, with longitudinal lines scarcely elevated, and some very short fulvous pile at the apex. Legs green, tarsi obscurely cyaneous.

To the above translated description of Blanchard's, I have only to add— "lateral foveæ of the thorax traceable to the dorsal channel, and fore tibiæ bidentate."

Length, 3¼ lines.

Hab.—Northern Coast of N. S. Wales, and Southern Queensland.

33. DIPHUCEPHALA SMARAGDULA, Boisd.

Voy. Astrol. Col. p. 204; Burm. Hand. IV. p. 117; *D. pusilla,* Waterh. Trans. Ent. Soc. Lond. 1, p. 226.

Nitid, green, clothed above and beneath with decumbent pile. Head punctate, the clypeus densely, and in the male slightly emarginate and reflexed, the angles broadly rounded. Thorax transverse, thinly punctate, the anterior and lateral angles acute, the dorsal channel wide and deep at the base, and the lateral foveæ deep and extending across the dorsal channel. Scutellum depressed and minutely punctate towards the apex. Elytra coarsely and rugosely punctate. Legs green, tarsi cyaneous. Fore tibiæ bidentate.

Length, 3 lines.

Hab.—N. S. Wales.

34. DIPHUCEPHALA PRASINA, n. sp.

Grass-green, subopaque, densely and sharply punctate. Head minutely punctate, the clypeus of the male roundly but not deeply emarginate with the angles slightly reflexed and rounded. Thorax very minutely and densely punctate, the lateral angle acute, the dorsal channel very wide and shallow on the basal half. and the lateral foveæ extending to the middle in a shallow groove, Scutellum rounded on the sides, depressed a little near the apex, where it is exceedingly minutely punctate. Elytra transversely punctate, with two distinctly elevated costæ and the humeral callus of a violet colour. The under surface is clothed with white decumbent pile, with the apex of each abdominal segment glabrous. Legs green, tarsi reddish, the fore tibiæ bidentate.

Lenth, 2 lines.

Hab.—Bargo.

3. Dorsal channel of thorax double at the base.

35. DIPHUCEPHALA AURULENTA, Kirby.

Trans. Linn. Soc. Lond. XII. p. 400; Waterh. Trans. Ent. Soc. Lond. I. p. 222; Burm. Handb. IV. p. 116; *D. foveolata,* Boisd. Voy. Astrol. Col. p. 203.

Of a coppery-red colour, lightly pilose above, more densely beneath. Head densely punctate in front, depressed broadly on the forehead between the eyes, the clypeus in the male very slightly emarginate and reflexed. Thorax coarsely and sparsely punctate, the dorsal channel slight on the anterior half, and very large, deep and square on the basal half, and divided in the middle by a smooth ridge; the lateral foveæ extending in a deep groove to the dorsal channel. Elytra densely and rugosely punctate in rows. Anterior tibiæ strongly bidentate, the teeth reddish.

Length, 4 lines.

Hab.—New South Wales Coast districts.

I have two imperfect specimens of a very brilliant species from the Richmond River, which closely resembles this one in every respect, excepting its more brilliant colouring and less pilosity. I have given it the cabinet name of *D. effulgens.*

36. DIPHUCEPHALA PARVULA, Waterh.

Trans. Ent. Soc. Lon. I. p. 223; Burm. Handb. IV. p 118.

Golden or coppery-green, rather thinly pilose. Head densely punctate in front, the clypeus in the male somewhat triangularly roundly emarginate, the angles rounded and reflexed. Thorax coarsely and thinly punctate, the dorsal channel broad on the basal half, divided into two by a smooth central ridge not extending on the anterior half, and the lateral foveæ very wide at the sides, and scarcely reaching the middle. Scutellum smooth. Elytra rugosely punctate, anterior tibiæ with the terminal tooth only.

Length, 2½ lines.

Hab.—New South Wales.

37. DIPHUCEPHALA PYGMÆA, Waterh.

Trans. Ent. Soc. Lond. I. p. 227; Burm. Handb. IV. p. 118; *D. fulgida?* Boisd. Voy. Astrol. Col. p. 205.

Green, scarcely nitid, rather densely covered on the upper surface with short decumbent and yellowish pile, beneath more densely whitish pilose. Clypeus of the male narrow and recurved, moderately emarginate. Head and thorax extremely minutely and densely punctate; having a somewhat sericeous appearance. The dorsal channel of the thorax is broad and very shallow on the basal half, with a very faint elevated ridge in the middle, the lateral foveæ are rather large and extend to the middle. The scutellum is depressed in the middle and very minutely punctate. Elytra less coarsely punctate than usual, the two longitudinal ridges distinct. Anterior tibiæ bidentate, the teeth reddish.

Length, 2 lines.

Hab.—New South Wales.

38. DIPHUCEPHALA PURPUREITARSIS, n. sp.

Green, head and thorax with a blue tinge, a short thin pubescence on the upper surface, a slightly denser decumbent pile beneath. Clypeus of male slightly emarginate and reflexed. Thorax finely punctate, the dorsal channel broadly oval on the basal half with a distinct but low middle ridge, the lateral foveæ not reaching the middle. Scutellum with a fovea near the base. Elytra rugosely and rather obliterately punctate, rather nitid, the two longitudinal ridges distinct. Abdomen and legs brilliant green, tarsi long, slender and of a reddish-purple colour, anterior tibiæ bidentate.

Length, 2 lines.

Hab.—New South Wales.

39. DIPHUCEPHALA LATERALIS, n. sp.

Green, subnitid, the elytra broadly bordered on the sides with golden-red, the upper surface rather densely yellowish-pilose. Head densely punctate, the clypeus of the male very slightly emarginate and reflexed. Thorax densely and finely punctate, the dorsal channel on the basal half forming two rather narrow foveæ separated by a rather broad interval, the lateral foveæ are deep and do not reach the middle. The scutellum is slightly depressed in the middle. The elytra are densely and sharply punctate, the two longitudinal ridges on each side moderately distinct. Under surface thinly clothed with decumbent white pile. Anterior tibiæ bidentate.

Length, 2 lines.

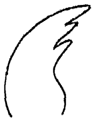
Hab.—New South Wales.

40. DIPHUCEPHALA OBSOLETA, n. sp.

Of a coppery hue, subnitid, without pile above, pilose beneath. Clypeus of the male acutely angled. Thorax rather thinly punctate, except in the foveæ, the dorsal channel continuous, but very broad and deep on the basal half, where it is divided by an almost obsolete ridge; the lateral foveæ deep and reaching the middle. Scutellum of elongate triangular form, impressed in the middle. Elytra coarsely transversely punctate. Legs wanting.

Length, 2 lines.

Hab.—New South Wales.



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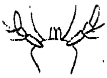

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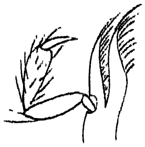

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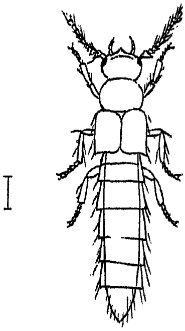

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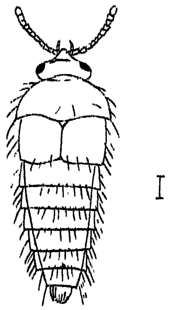

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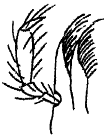

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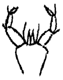

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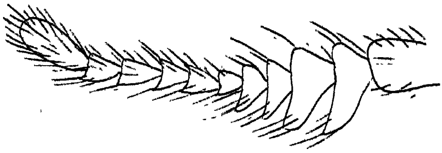

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G.H. BARROW, DEL ET. LITH.

A REVISION OF THE STAPHYLINIDÆ OF AUSTRALIA.

By A. Sidney Olliff, F.E.S.,

Assistant Zoologist, Australian Museum.

Part I.

It is now some months since I undertook, at the request of the Hon. William Macleay, to prepare a descriptive paper on the Australian Staphylinidæ for publication in the Proceedings of this Society. It was not without considerable hesitation that I undertook the task as I knew that if I did so it implied the examination of many hundred specimens and the preparation of a large number of microscopic dissections of their mouth-parts and appendages.

When I began to investigate the literature of the subject I soon found that as regards the genera my work would not be as satisfactory as I could wish. Outside the Palæarctic or North-Temperate region comparatively little is known of these insects and consequently the present classification of the family is founded to a large extent on the species of Europe and North America. Following the example of that distinguished specialist Dr. David Sharp, who in an elaborate paper on the Staphylinidæ of the Amazon Valley (Trans. Ent. Soc. Lond., 1876) distinctly stated his object was to describe the *species* and that he only concerned himself with genera because questions of nomenclature compelled him to do so, I have refrained from making new generic names except in the case of a few very distinct forms. When our knowledge of this group is more complete I have no doubt it will be found convenient to establish genera for some Australian species now associated with European forms, but at this distance from the large collections of Europe and in the absence of complete scientific libraries it is not possible to deal with the genera with any certainty of good results and I have, therefore, contented myself with summarizing their characters and adding such hints as appeared to me likely to assist in the identification of their species.

In the account now laid before the Society, which dealing as it does with a limited amount of material—probably not a tithe of the existing species—must of necessity be only a contribution to a general monograph of the family, I have restricted myself to the definition of the sub-families, tribes, genera and species. Affixed to some of the genera a few observations on geographical distribution will be found, but all generalizations are postponed until the completion of the paper.

The classification of the Staphylinidæ propounded by Erichson (1) in 1840 has been generally followed up to the present time; a few corrections and modifications have been made by Duval, Kraatz, Rey, Sharp and other recent writers, but the broad principles of his system have been left untouched. In the present paper the classification employed by Lacordaire in his "Genera des Coléoptères," (Vol. II., 1854), which is essentially that of Erichson, has been adopted with but little alteration.

The only paper dealing exhaustively with the Australian fauna which has appeared is M. Albert Fauvel's "Staphylinides de l'Australie et de la Polynésie," published in two parts, in the Annals of the Genoa Museum. (2) Here will be found detailed descriptions of all the species known at that time, including a large number of new forms. How much I am indebted to this work will appear throughout the following pages.

I have pleasure in thanking Mr. Augustus Simson of Launceston, Tasmania, and Mr. George Masters for the loan of their collections and for the trouble they have taken to answer my enquiries as to the localities and habits of the species they have themselves collected. To Mr. George Barnard I am indebted for a few Queensland species, and I have to thank Professor Ralph Tate of the Adelaide University, for a small number of specimens named by M. Fauvel as well as for permission to describe one or two new forms from the entomological collection which is under his charge. Besides these materials I have examined the extensive collections in the Macleay and Australian Museums, the latter containing the types of the species from Gayndah, described by Mr. Macleay, as well as the specimens collected by myself in the Blue Mountains, in Tasmania and in the immediate vicinity of Sydney.

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(1) Genera et species Staphylinorum, Insectorum Coleopterorum familiæ: Berlin.

(2) Annali del Museo Civico di Storia Naturale di Genova, X., pp. 168-298 (1877), and XIII., pp. 465-598 (1878). Translations of a few of these descriptions have been published by Mr. S. E. Holder (Trans. Royal Soc. S. Australia, IV., pp. 77-97, 1882), under the title "Descriptions of South Australian Staphylinidæ; translated from the French and Latin of M. Fauvel," but I have not thought it necessary to quote them here as they are not always intelligible and the paper is very incomplete, only containing thirty-two species.

Whenever I possessed well-authenticated specimens of a species I have redescribed that species. In not a few cases, however, where no specimens have been available for examination, or where the species have been identified from books, I have, in order to avoid confusion, taken the description from a previous author, usually that of the original describer, appending his initials in acknowledgment.

Family STAPHYLINIDÆ.

Maxillæ of variable form and structure, with two lobes, usually ciliate, the external often bi-articulate; maxillary palpi 4-jointed, except in Aleochara and Correa where there is a minute fifth joint. Mentum more or less corneous, transverse or quadrate, the anterior part separate. Ligula generally membranous, very seldom corneous. Paraglossæ usually distinct and in some cases very conspicuous. Labial palpi usually 3-jointed, sometimes (in certain Aleocharinæ) with one, two or four joints.

Eyes lateral, except in the Steninæ, usually finely granulated. Ocelli or simple eyes exist in the Homalinæ.

Antennæ 11, rarely 10-jointed, variable in form, but most frequently filiform and shorter than the body; sometimes clavate or thickened towards the tip and in a few instances distinctly clubbed.

Prothorax variable in form; the side-pieces not separate; coxal cavities usually open behind. Mesosternum and metasternum with the epimera distinct, the side-pieces of the latter narrow.

Elytra truncate, the suture straight; wings folded under the elytra when present.

Abdomen corneous, very freely movable, with seven or eight exposed segments.

Legs variable in form; anterior coxæ generally large, prominent, conical and contiguous, rarely (Piestinæ) small, globular and not prominent, or subcylindrical and transverse (Protininæ, Micropeplus); intermediate coxæ conical or subcylindrical, not prominent, either contiguous or distant; posterior coxæ variable in form, contiguous, except in Micropeplus where they are small, cylindrical and distant. Tarsi usually 5-jointed, sometimes 4-jointed, and rarely (in Micropeplus and certain Oxytelinæ) 3-jointed; in many of the Aleocharinæ the heteromerous character of tarsal structure is reproduced and reversed (*i.e.* 4.5.5) and in others the four anterior tarsi are four jointed.

The Staphylinidæ or Rove-beetles compose the group Brachelytra of authors and constitute an exceedingly large family. They are mostly of small size and are readily distinguished by their elongate flexible abdomen of which seven or eight corneous segments are exposed and their short straightly sutured elytra. Their nearest affinities are with the Geodephaga on the one hand and the Clavicorns on the other, but they are generally considered to form a group in themselves. A great number of the species are carrion feeders, being found in the dead bodies of animals; many are found in the dung of quadrupeds; others in rotten fungi. Indeed the great majority frequent decaying animal and vegetable substances which they assist in removing, the business of scavengers being one of their chief functions. They are not all scavengers, however; many are predatorial and others are found in flowers, under bark, under sea-weed on the sea shore, frequently between high and low tide-marks; whilst one or two live as parasites on small mammals. Among the most interesting of the exceptions to these habitats may be mentioned the species which are found living in the nests of certain social hymenoptera, particularly those found in the nests of wasps and hornets (a habit not yet recorded of any Australian species) and those which pass their lives in the nests of ants. Little or nothing has been written concerning the habits of the Australian species, but the Coleopterist who has been accustomed to collect these insects in Europe is at once struck by the constancy with which the habits of a particular genus or tribe are maintained in their antipodean representatives.

Of the metamorphoses of the Australian Staphylinidæ nothing is known, and even our knowledge of those of Europe is very scanty. The larvæ somewhat resemble the perfect insects and vary comparatively little among the different species. They are exceedingly active and voracious not unfrequently attacking prey many times their own bulk. (1) Their chief characters may be briefly summarized as follows:—Elongate, linear or narrowed posteriorly; antennæ composed of four or five joints; ocelli variable in number; mouth-organs always well developed, the mandibles simple or bifid, rarely dentate; nine abdomina segments visible, the apical segment provided with two movable bi-articulate appendages; legs short; tarsi terminated by a single claw.

Nineteen species, mostly European, are enumerated by Chapuis and Candèze in their "Catalogue des larves Coléoptères," and a few have since been described by Candèze, Kraatz, Perris and others, but there is, perhaps, no family so considerable as the Staphylinidæ of which so little is known of the earlier stages.

Sub-Family I. ALEOCHARINÆ. (2)

Prothoracic stigmata conspicuous. Antennæ inserted upon the front, close to the inner anterior margin of the eyes. No ocelli. Elytra leaving nearly the whole of the abdomen exposed. Abdomen laterally margined, the terminal segment often indistinct and contracted within the preceding one. Anterior coxæ large and conical; the posterior coxæ transverse. Tarsi variable in the number of joints, having all the feet 5 or 4-jointed, the anterior 4-jointed and the intermediate and posterior 5-jointed, or the anterior and intermediate 4-jointed and the posterior 5-jointed.

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(1) For an instance where a Staphylinid larva, measuring about half an inch, was observed in a vigourous encounter with an earthworm five inches in length, see Nature, XXX., p. 146 and Proc. Ent. Soc. Lond., 1884, p. XVIII.

(2) For a valuable paper treating of the genera of this sub-family, see Kraatz, Linnaea Entomologica XI., pp. 1-43 (1857).

Tribe 1. ALEOCHARINA.

Maxillæ with the outer margin of the inner lobe corneous, the inner margin membranous and ciliate; maxillary palpi moderately elongate, the terminal joint small, subulate and generally much shorter than the preceding one: in Aleochara and Correa there is a very small additional joint. Eyes not very prominent.

The following key, which is chiefly based on the tables of Lacordaire and Fauvel, will facilitate the determination of the genera of this tribe:—

I. Antennæ 11-jointed.
  A. Anterior tarsi 4-jointed, intermediate and posterior 5-jointed.
    1. Prothorax with the angles rounded or not produced.
      a. Antennæ filiform, robust or slightly thickened towards the apex.
      aa. Head carried on a very fine neck.
        i. Intermediate coxæ remote.............................. ......*Falagria.*
        ii. Intermediate coxæ near together.....................*Myrmecopora*
      bb. Head not carried on a slender neck.
        i. First joint of the posterior tarsi very long.
          * Mesosternal plate acute; intermediate coxæ subcontiguous............. ....*Gnypeta.*
          ** Mesosternal plate rounded; intermediate coxæ remote ....*Myrmedonia.*
        ii. First joint of the posterior tarsi not very long, not as long as the two following together.
          * Intermediate coxæ remote ....*Pelioptera.*
          ** Intermediate coxæ near together.................*Homalota.*
      b. Antennæ with joints 2-6 strongly dilated externally. *Apphiana.*
    2. Prothorax with the posterior angles produced.........*Dabra.*
  B. Anterior and intermediate tarsi 4-jointed, posterior 5-jointed.

1. Labial palpi 2-jointed.
   - a. First joint of the posterior tarsi at least equal to the 2nd and 3rd united.................................*Placusa.*
   - b. First joint of the posterior tarsi about equal to the second..*Silusa.*
2. Labial palpi 3-jointed...*Bolitochara.*

C. All the tarsi 5-jointed.

1. Head jutting out, free from the prothorax, and contracted at the base.
   - a. First joint of the posterior tarsi shorter than the two following together.................................*Phloeopora.*
   - b. First joint of the posterior tarsi at least equal to the two following together.. ....*Calodera.*
2. Head sunk in the prothorax or slightly contracted at the base.
   - a. Labial palpi 4-jointed, maxillary 5-jointed.
   - aa. Posterior tarsi with the 1st joint one-half longer than the 2nd ....*Aleochara.*
   - bb. Posterior tarsi with the 1st joint about equal to the 2nd ....*Correa.*
   - b Labial palpi 3-jointed, maxillary 4-jointed.
   - aa. External lobe of the maxillæ provided above with lobiform appendices ....*Polylobus.*
   - bb. External lobe of the maxillæ without lobiform appendices ....*Oxypoda.*

II. Antennæ 10-jointed ; tarsi 4-jointed..........................*Oligota.*

1. FALAGRIA.

Mannerheim, Brachél. p. 86 (1830); Lacordaire, Gen. Col. II., p. 28. — *Myrmecocephalus*, Macleay, Trans. Ent. Soc. N.S.W. II., p. 134 (1871).

Mentum transverse, slightly emarginate in front. Ligula short, bifid in front. Paraglossæ prominent. Maxillary palpi with the second and third joints sub-equal. Labial palpi 3-jointed, 2nd joint slightly shorter than 1st., last joint thickened at apex. Maxillæ similar to those of Homalota. Mandibles unarmed. Head nearly orbicular, constricted behind into a narrow neck. Antennæ rather long, somewhat thickened towards the extremity, the 2nd and 3rd joints nearly equal, longer than the following ones. Prothorax narrowed behind, usually deeply furrowed. Elytra truncated behind. Abdomen broadly margined. Legs rather long; intermediate coxæ remote; tarsi 4:5:5, first joint of the posterior pair elongate.

This genus is widely distributed, but is more numerously represented in the new than in the old world, a large proportion of the species being found in tropical America.

1. Falagria Fauveli.

Falagria Fauveli, Solsky, Hor. Soc. Ent. Ross. V., p. 113 (1867).

Myrmecocephalus cingulatus, Macleay, Trans. Ent. Soc. N.S.W. II., p. 134 (1871).

Elongate, black, somewhat shining, sparingly covered with very fine grey pubescence, finely aciculate. Head broadly transverse, moderately convex, rounded behind, with a longitudinal impression in front. Antennæ piceous, longer than the head and prothorax together, slightly thickened towards the extremity; basal joint not very large, slightly thickened, 2nd joint a little shorter, 3rd about as long as the 1st, 7-10 of about equal lengths, subcylindrical, terminal joint slightly larger and subacuminate at the extremity. Prothorax cordate, subopaque, considerably longer than broad, at its broadest part narrower than the head, with a moderately strong median line which is impressed at the base; sides slightly sinuate and feebly constricted behind. Scutellum rounded behind, feebly impressed longitudinally. Elytra shining fuscous, with a coppery tinge, a little broader than the head, subquadrate, slightly convex, finely and sparingly pubescent; the suture somewhat impressed near the scutellum. Abdomen elongate, somewhat shining, narrower in front than the elytra, widest just behind the middle; segments 2-3 and the ventral segment margined with testaceous. Legs piceous, tarsi paler. Length 3 mm.

♀ The head less strongly impressed in front and the median line on the prothorax less impressed posteriorly.

Gayndah, Queensland (in flood-refuse); Sydney, New South Wales; King George's Sound, West Australia; Tasmania.

After a careful examination of the type specimens of *Myrmecocephalus* in the collection of the Australian Museum, which, however, are not in a very good state of preservation, I have arrived at the conclusion that *M. cingulatus*, and not *M. bicingulatus*, is identical with *Falagria Fauveli.*

2. FALAGRIA BICINGULATA.

Myrmecocephalus bicingulatus, Macleay, Trans. Ent. Soc. N.S.W. p. 134 (1871).

Elongate, black, somewhat shining, sparingly covered with fine grey pubescence, distinctly aciculate. Head broadly transverse, strongly rounded behind. Antennæ piceous. Prothorax cordate, subopaque, much longer than broad, considerably narrower than the head, the median line not very strongly impressed. Elytra broader than the head, opaque fuscous, finely and sparingly pubescent. Abdomen elongate, narrower in front than the elytra, widest behind the middle; the second and third segments margined with testaceous. Legs dark piceous, the tarsi paler. Length 3¾ mm.

Burnett River, Gayndah, Queensland; In flood-refuse.

The unique specimen described under this name is not in sufficiently good condition to permit of more exact diagnosis. Its larger size, broader head and longer and more angularly rounded prothorax are the only characters I find to separate it from the preceding species.

3. FALAGRIA PALLIPES, sp. n.

Elongate, dark reddish testaceous, somewhat shining, sparingly covered with extremely fine grey pubescence and very finely punctured. Head broadly transverse, convex, strongly rounded behind, very finely and not very closely punctured. Antennæ pale reddish testaceous, longer than the head and prothorax together, slightly thickened towards the extremity; basal joint moderately large, joints 2-3 a little shorter, 4-10 of nearly equal lengths, subcylindrical, terminal joint slightly larger and acuminate at the extremity. Prothorax considerably longer than broad, cordate, at its broadest part slightly narrower than the head, extremely finely punctured, with a strongly impressed median line; sides rounded in front, narrowed and slightly constricted behind; posterior angles obtuse. Scutellum rounded behind, feebly impressed longitudinally. Elytra considerably broader than the head, sub-quadrate, slightly convex, extremely finely and irregularly punctured, moderately closely covered with fine grey pubescence; the suture somewhat impressed near the scutellum. Abdomen moderately broad but narrower in front than the elytra; segments 2-3 and the posterior margin of the terminal segment pale reddish testaceous. Legs pale testaceous. Length $2\frac{1}{4}$ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

This very distinct species differs from the foregoing in colour, in its smaller size and more robust form, and in having its upper surface extremely finely and rather closely punctured.

2. Bolitochara.

Mannerheim, Brachél. p. 75 (1830); Lacordaire, Gen. Col. II., p. 30.

Mentum sub-transverse, contracted and slightly emarginate in front. Ligula narrow and elongate, bifid in front. Paraglossæ very short, acuminate at the tip. Maxillary palpi with the third joint a little longer than the second. Labial palpi 3-jointed, 2nd joint rather shorter but scarcely narrower than first, the 3rd slightly longer than the 2nd. Maxillæ similar to those of Homalota. Mandibles unarmed. Head nearly orbicular, somewhat constricted behind. Antennæ as in Falagria. Prothorax gradually narrowed in front. Mesosternum carinate. Elytra truncate behind. Abdomen parallel-sided. Legs moderately long; intermediate coxæ not quite contiguous; tarsi 4:4:5, first joint of posterior pair elongate.

This genus, which is of wide distribution, differs from *Falagria*, in the structure of the ligula and tarsi; in *facies* it resembles certain species of *Oxypoda*.

4. BOLITOCHARA DISCICOLLIS.

Bolitochara discicollis, Fauvel, Ann. Mus. Genov. XIII. p. 595 (1878).

Facie et magnitudine *B. variae*; rufa, nitida, parce pubescens, antennis praeter basim rufo piceolis, elytris segmentisque 4-5 totis, 6° basi plus minusve latius nigro piceis, humeris saepius rufescentibus; antennis sat crassis, articulo 4° paulo longiore quam latiore, 5-10 sensim brevius transversis, 11° magno, obtuso; capite vage utrinque parum fortiter, thorace elytrisque sat dense fortius, his vix squamatim, abdomine segmentis 2-5 basi fere tantum, 6° toto parum dense multo subtilius, punctatis; thorace fortiter transverso, capite tertia parte latiore, disco toto depresso, lateribus ante medium antice fortiter rotundato angustatis, postice parum angustatis, angulis posticis parum obtusis; elytris hoc tertia fere parte latioribus, quarta longioribus, sat transversis; abdomine parallelo, segmentis 2-4 basi profunde transversim, 5° vix impressis. Long. 3⅓ mm. *(Fvl.)*

Adelaide, South Australia; West Australia.

3. HOMALOTA.

Mannerheim, Brachél. p. 73 (1830); Lacordaire, Gen. Col. II., p. 32.

Mentum transverse, constricted and slightly emarginate in front. Ligula very short, bilobed. No visible paraglossæ. Maxillary palpi with the 2nd and 3rd joints sub-equal. Labial palpi 3-jointed, the 2nd joint shorter than the 1st, and a little longer than the 3rd. Maxillæ with the internal lobe membranous on the inner side, corneous on the outer side, obliquely cut off internally and ciliate or armed with small spines; the external lobe a little longer than the other, corneous in the middle, membranous at the base and extremity. Mandibles unarmed. Head sub-orbicular. Antennæ moderately long, somewhat thickened towards the extremity; 2nd and 3rd joints generally equal in length and shorter than the 1st. Prothorax variable in form. Elytra truncate behind, with a short sinus which is usually very distinct near the external angles. Legs moderately long; intermediate coxæ near together; tarsi 4:5:5, the last pair with the 1st joint elongate, joints 2-4 slightly decreasing.

Under the name *Homalota* a vast number of species from all parts of the world, varying considerably in form and structure, have been described; latterly the original genus has been to some extent sub-divided—*Gnypeta* and *Brachida* being established at its expense—but it still contains a vast assemblage of species. The genus is here regarded in the sense of Kraatz, whose sections, founded on the form of the prothorax and abdomen, I have attempted to follow.

Section 1.—*Abdomen parallel.*

a. *Prothorax strongly transverse.*

5. HOMALOTA PICEICOLLIS.

Homalota piceicollis, Fauvel, Ann. Mus. Genov. XIII., p. 577 (1878).

Facie et magnitudine *angusticollis*, sed colore omnino alia; nigra, nitida, corpore antico lurido alutaceo, nitidulo, parum dense fulvo pubescente, antennarum articulis 2 primis, thorace, segmentisque 2-3 piceo testaceis, antennis elytrisque piceolis, pedibus flavis; antennis vix incrassatis, sat brevibus et tenuibus, articulo 4° parum, 8-10 magis transversis; capite vix perspicue, thorace creberrime subtilissime, elytris paulo fortius creberrime vix rugosule, abdomine parum dense subtilissime, segmentis 5-6 vage, punctulatis; capite disco medio foveolato; thorace capite sat latiore, fortiter transverso, lateribus parum rotundatis, basi utrinque sinuata, media parum fossulata; elytris thorace sat latioribus, tertia parte longioribus; abdomine apice vix angustiore; ♂ segmento 7° supra apice truncato, utrinque inciso, extus incisuram spinula armato, subtus triangulariter parum producto. Long. 2½ mm. (*Fvl.*)

Sydney, New South Wales.

6. HOMALOTA MOLESTA, sp. n.

Moderately robust and convex, pitchy black, shining, rather sparingly clothed with very fine fulvous pubescence; head, prothorax and elytra dark reddish castaneous, the latter somewhat paler than the head or prothorax; first two joints of the antennæ and the legs reddish testaceous.

Head transverse, very finely and closely punctured. Antennæ rather short, thickened towards the extremity, 4th joint slightly, 5th to 10th distinctly transverse. Prothorax finely and closely punctured, with a distinct transverse foveolate impression in the middle near the base; the anterior angles rounded. Elytra broader than the prothorax, finely, irregularly and densely punctured, the external apical angles inclining to pitchy, the suture slightly impressed at the base. Abdomen finely and sparingly punctured. Legs pale testaceous. Length 2½ mm.

Sydney, New South Wales.

Appears to be allied to the foregoing species.

7. HOMALOTA CORIARIA.

Homalota coriaria, Kraatz, Ins. Deutsch. II., p. 282; Sharp, Trans. Ent. Soc. Lond., 1869, p. 204; Fauvel. Ann. Mus. Genov. X. p. 283 (1877)—*Homalota australis*, Jekel, Col. Jek. I. p. 47 (1873).

Forma lata, brevi, convexa *H. succicolae* et *trinotatae;* corpore, praesertim capite thoraceque nitidis, his densissime obsolete, elytris crebre subtilissime, abdomine subtiliter parce segmentis 2-5 punctatis, 6.° fere laevi; nigra; antennarum basi, elytris pedibusque squalide testaceis; illis angulo apicali infuscatis; antennis robustis, brevibus, articulis 4-5, praesertim 6-10 fortiter transversis; capite thoraceque latis, hoc brevissimo, late excavato (♂), foveolato et subsulcato (♀), lateribus antice sat angustatis; angulis posticis rotundatis; elytris amplis, thorace quarta parte latioribus, tertia longioribus; ♂ segmento 7.° supra leviter inciso, incisuram extus sinuato, utrinque dentato. Long. 2 mm. (*Fvl.*)

New South Wales; Port Augusta, Nuriootpa, South Australia.

A cosmopolitan species.

8. HOMALOTA ATYPHELLA, sp. n.

Elongate, slightly convex, dark piceous, shining, sparingly clothed with fine grey pubescence ; first two joints of the antennæ and the legs reddish testaceous.

Head transverse, very slightly narrowed behind, extremely finely and closely punctured. Antennæ moderately long, thickened towards the extremity, 4th joint not very small, longer than broad, 7th to 10th transverse, apical joint acuminate at the extremity. Prothorax broadly transverse, extremely finely and rather closely punctured on the disc and at the base, not so closely punctured near the front ; anterior angles rounded ; sides arcuately rounded. Elytra broader and considerably longer than the prothorax, extremely finely and not very closely punctured, the suture feebly impressed at the base ; the sides nearly straight. Abdomen finely and very sparingly punctured ; segments 2-4 rather strongly impressed at the base. Legs reddish testaceous. Length 2½ mm.

Botany, Sydney, New South Wales ; Lottah, Gould's Country, Tasmania. (*Simson.*)

This species resembles *Homalota coriaria* in form, but is somewhat flatter.

9. HOMALOTA PSILA, sp. n.

Elongate, moderately robust and convex, pitchy black, shining, very finely and sparingly pubescent ; the elytra, first two joints of the antennæ, and the legs dark reddish testaceous.

Head transverse, rather finely and not very closely punctured. Antennæ with the first three joints elongate, 4th small, 7th to 10th transverse. Prothorax finely and rather closely punctured, sparingly clothed with very fine fuscous pubescence ; the sides moderately rounded. Elytra broader and considerably longer than the prothorax, rather finely, irregularly and closely punctured, the sides dusky. Abdomen finely and not very closely punctured ; the 6th segment very sparingly punctured and narrowly margined with testaceous. Legs reddish testaceous. Length, 4 mm.

Lottah, Gould's Country. (*Simson*), Mount Wellington (2,000 feet), Tasmania.

Closely allied to *Homalota trinotata* of Europe, but less strongly pubescent; the head more strongly and much less closely punctured, the prothorax not quite so broad and the elytra rather more finely punctured.

10. HOMALOTA AUSTRALIS.

Myrmedonia australis, Macleay, Trans. Ent. Soc. N.S.W. II., p. 135 (1871).

Moderately robust, slightly convex, reddish testaceous, shining, rather closely covered with fine flavous pubescence ; elytra dusky ; 4th and 5th abdominal segments pitchy.

Head transverse, rather large, convex, densely and rather finely punctured. Antennæ short, fuscous, except the first three and the apical joints which are testaceous, somewhat thickened towards the extremity ; first three joints elongate, 4th small, 5-10 transverse. Prothorax strongly transverse, considerably broader than the head, narrowed posteriorly, densely and moderately strongly punctured, with a distinct foveolate impression in the middle at the base ; the sides gently rounded. Elytra broader and somewhat longer than the prothorax, moderately strongly, irregularly and rather densely punctured. Abdomen finely and rather closely punctured. Legs testaceous. Length 2½ mm.

Gayndah, Queensland.

b. *Prothorax not or only slightly transverse.*

11. HOMALOTA POLITULA.

Homalota politula, Fauvel, Ann. Mus. Genov. XIII., p. 577 (1878).

Habitu et colore omnino *Calodera australis*, sed alii generis, antennis haud clavatis, circa apicem parum incrassatis, longioribus, articulo 4.° subquadrato, sequentibus vix latioribus, sensim latioribus, sat transversis, 11.° dilutiore ; punctura capitis thoracisque nitidissimorum obsoleta, elytrorum quadruplo creberrima, subtilissima, segmentorum subtilissima, 2-5 sat densa, 6.° parciore ; capite minore, angustiore, oblongo, oculis minoribus ; thorace magis obscuro, multo longiore, angustiore, vix transverso, antice paulo magis quam postice angustato, lateribus parum rotundatis, angulis posticis fere omnino rotundatis, fovea basali obsoleta; elytris angustioribus, sat dense fulvo pubescentibus. Long. 2⅓-2½ mm. (*Fvl.*)

Adelaide, South Australia.

12. HOMALOTA CHARIESSA, sp. n.

Elongate, narrow, moderately convex, reddish testaceous, shining, very sparingly covered with fine fulvous pubescence; head and abdomen, except the first two and terminal segments, pitchy black; two first joints of the antennæ and legs pale testaceous.

Head rather convex, extremely finely and sparingly punctured on the disc, a few moderately strong punctures on each side of the middle, with an indistinct transverse impression at the base. Antennæ rather short, moderately robust and thickened towards the extremity, 4th joint transverse, 5th to 10th distinctly transverse. Prothorax slightly transverse, extremely finely and not very closely punctured, with four large punctures just before the middle on the disc, and a few smaller punctures near the anterior margin; sides moderately strongly rounded. Elytra somewhat broader and considerably longer than the prothorax, moderately strongly, irregularly and not very closely punctured; the sides and the external apical angles pitchy. Abdomen finely and sparingly punctured; segments 2 and 3 dusky, the 7th and the apical margin of the 6th testaceous, the others pitchy black. Legs pale testaceous. Length 2 mm.

Hobart, Lottah, Gould's Country, Tasmania.

13. HOMALOTA GENTILIS.

Homalota gentilis, Fauvel, Ann. Mus. Genov. XIII., p. 578 (1878).

Facie *marinae,* sed minor et angustior, picea vel rufo picea, corpore antico dense longius griseo pubescens, capite nigro piceo, abdomine praeter basim nigricante, segmento 6.° apice latius, 7.° toto, antennarum articulo 1.° pedibusque testaceis; his rufo piceis, articulo 4.° subquadrato, sequentibus sensim parum latioribus, sat

transversis, 11.° acuminato; capite transverso non perspicue, thorace crebre subtilissime, elytris densius, paulo fortius vix asperatim, abdomine segmentis 2-4 sat dense subtiliter, 5.° parcius, 6.° vage punctatis; thorace vix transverso, subquadrato, lateribus subparallelis, angulis posticis subobtusis, basi obsolete foveolato, breviter vix sulcato; elytris thorace sat latioribus, quarta parte longioribus, planiusculis; abdomine apice vix augustato; ♂ segmento 6.° supra apice subtruncato, subtilissime crenulato, extus utrinque parum inciso, extus incisuram vix spinula subtilissima, brevissima armato, subtus rotundatim sat producto. Long. 2 mm. (*Fvl.*)

Sydney, New South Wales; Melbourne, Victoria.

14. HOMALOTA PAVENS.

Homalota pavens, Erichson, Käf. Mark. I., p. 689; Sharp, Trans. Ent. Soc. 1869, p. 98; Fauvel, Ann. Mus. Genov. XIII., p. 578 (1878).

Linearis, corpore antico opaco, dense subtilissime punctato, alutaceo, elytris antennisque fuscis, illis basi, palpis pedibusque testaceis: antennis elongatis, parum incrassatis, robustis, articulis 4-6 aequalibus, multo longioribus quam latioribus, 9-10 vix transversis, 11° ovato, acuminato; capite suborbiculari, fronte obsolete foveolata; thorace vix longiore quam latiore, vix subcordato, late sulcatulo, angulis posticis indicatis; elytris thorace tertia fere parte latioribus, non longioribus, magis perspicue punctulatis; abdomine segmentis 2-5 crebre omnium subtilissime punctulatis, 6.° laeviusculo; ♂ segmento 6.° medio carina longitudinali elevata, segmenti apicem fere attingente, 7.° apice denticulis 4 obtusis instructo. Long. 3⅗ mm. (*Fvl.*)

Victoria; also found in Europe.

Section 2.—*Abdomen narrowed posteriorly.*

15. HOMALOTA SORDIDA.

Homalota sordida, Marsham, Ent. Brit. p. 514 (1802); Fauvel Ann. Mus. Genov. XIII. p. 576 (1878).

Facie et colore *Oxypodae lividipennis;* multo minor, fusiformis, subconvexa, nigra, sat opaca; ore, antennis, segmentorum marginibus, ano pedibusque rufis; tarsis elytrisque testaceis, his circa scutellum fuscis; densissime brunneo pubescens; corpore antico creberrime densissime, abdomine minus opaco dense subtiliter et aequaliter, punctatis; antennis maxime robustis, elongatis, articulo 4.° vix transverso, 5-10 subquadratis, 11.° duobus praecedentibus longiore; thorace convexo, obsolete sulcato, parum transverso, antice sat angustato, angulis posticis obtusissimis, basi vix sinuata; elytris hoc paulo latioribus et longioribus; ♂ segmento 7.° supra apice subemarginato, subtus conico, maxime producto; ♀ subtus vix producto, profunde emarginato. Long. 3-3⅓ mm. (*Fvl.*)

Adelaide, South Australia. A cosmopolitan species.

16. HOMALOTA ROBUSTICORNIS.

Homalota robusticornis, Fauvel, Ann. Mus. Genov. XIII., p. 576 (1878).

Facie et antennis longis, maxime robustis, *longicorni* vicina; paulo minor, magis nitida, vix pilosula, multo subtilius pubescens, triplo subtilius crebriusque punctata, abdomine nitido, segmentis 5-6 praesertim subtilius punctatis; antennis brevioribus et minus robustis, articulo 4.° quadrato, 5-10 multo brevioribus, inter se aequalibus, vix longioribus quam latioribus, 11.° multo breviore; elytris minus dilutis, piceis facillime distinguenda. Long. 2½ mm. (*Fvl.*)

Sydney, New South Wales.

17. HOMALOTA INDEFESSA, sp. n.

Elongate, moderately convex, testaceous, somewhat shining, rather closely covered with fine yellowish pubescence; antennæ, except the first four joints, and a large spot on the disc of the prothorax infuscate; 5th and basal half of the 6th and 7th abominal segments blue-black.

Head transverse, rather finely and closely punctured. Antennæ rather short, the first four joints pale testaceous, the others

infuscate; joints 4-10 transverse, 11th rounded at the extremity. Prothorax strongly transverse, narrowed behind, rather finely and closely punctured, with a moderately distinct infuscate marking on the disc extending from just behind the anterior margin to the base. Elytra considerably broader and rather longer than the prothorax, rather finely and closely punctured, obscurely infuscate near the sides. Abdomen rather finely and moderately closely punctured. Legs pale testaceous. Length 2½ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

4. GNYPETA.

Thomson, Skand. Col. III., p. 6.

I have not been able to see the description of this genus. The characters indicated in the key (see p. 408) may perhaps suffice for its identification.

18. GNYPETA FULGIDA.

Gnypeta fulgida, Fauvel, Ann. Mus. Genov. XIII., p. 583 (1878).

Latiuscula, subdepressa, abdomine attenuato, antice subtilissime, postice parcius longiusque griseo pubescens, nigra, antennarum articulis 3 primis palpisque flavis, pedibus anticis rufulis; antennis parum incrassatis, articulis 6-10 vix transversis, 11° crassiore, duobus praecedentibus subaequali; capite transversim ovali, sat depresso, disco inter oculos vix biimpresso, utrinque parum dense subtilissime punctato, linea media longitudinali latiuscula laevi; thorace sublaevi, capite sat latiore, fortiter transverso, lateribus sat rotundatis, antice fortiter angustatis, angulis posticis obtusis; elytris sat transversis, thorace quarta parte latioribus et longioribus, apice declivis, crebre omnium subtilissime punctulatis; abdomine elytris quarta parte angustiore, segmentorum 2-5 marginibus tantum subtiliter, 6.° 7.°que vix punctulatis, 2-3 basil aevissimis, profunde transversim impresso-sulcatis, 7.° apice supra truncato, subtus arcuatim satis producto. Long. 2½-2¾ mm. (*Fvl.*)

Melbourne, Victoria.

5. APPHIANA, gen. nov.

Mentum transverse, very slightly emarginate in front. Ligula very short, bifid. Maxillary palpi 4-jointed, the 1st joint exceedingly short, 2nd elongate and thickened towards the extremity

3rd slightly longer than 2nd, considerably thickened anteriorly, 4th small, much narrower than the preceding. Labial palpi 3-jointed, the 2nd joint about half as long as the 1st, the 3rd somewhat longer and narrower. Maxillæ narrow, the lobes of nearly equal lengths; the inner lobe membranous internally, ciliate near the apex; external lobe ciliate on the inner side near the extremity. Mandibles armed internally with two moderately large teeth, the apex acute. Head large, transverse, broadly and rather deeply depressed behind the antennæ. Eyes oval, moderately large, not very prominent. Antennæ 11-jointed; the basal joint nearly twice as long as broad, slightly narrowed at each extremity, joints 2-6 feebly dilated on the inner and very strongly dilated on the outer side,—the 2nd joint being twice as broad as long, the 3rd as broad as the second, but slightly shorter, the others considerably shorter and gradually decreasing in breath; 7th joint narrower, a little longer than broad, 8-10 slightly increasing in width, the apical joint nearly as long as the two preceding ones together, acuminate at the extremity. Prothorax transverse, a little narrower than the elytra, the sides and all the angles rounded. Scutellum small, triangular. Elytra rather longer than the prothorax, truncate and narrowly margined behind; the inner apical angles obtuse. Abdomen rather long, widest just behind the middle, rather strongly margined. Legs moderately long; femora unarmed; tarsi 4:5:5, posterior feet with the first joint not quite as long as the second.

This genus is chiefly remarkable for having some of the basal joints of the antennæ enormously dilated externally, a character unique, as far as I am aware, in the sub-family to which it belongs. Its location is somewhat difficult to determine, but I am of opinion that it cannot be far removed from *Peliopte ra*, which it resembles in *facies*, except that it is rather more convex.

19. APPHIANA VERIS, n. sp.

(Plate VII., fig. 1.)

Elongate, parallel, somewhat convex, dark piceous, shining, finely and sparingly pubescent; antennæ, palpi, prothorax and elytra reddish testaceous, legs pale testaceous; prothorax with an indistinct fovea on each side at the base; abdomen with segments 1-3 bordered with testaceous posteriorly.

Head slightly narrowed behind the eyes, rather finely and not very closely punctured, broadly and rather deeply depressed in front between the antennæ; the depression extending to behind the middle where its limit is defined by a small foveolate puncture. Antennæ considerably longer than the head and prothorax together, the first five joints paler than the others. Prothorax somewhat broader than the head, slightly narrowed in front, finely and not very closely punctured, narrowly margined behind, with an indistinct fovea near each side at the base; the anterior margin nearly straight; the sides rounded; the anterior and posterior angles strongly deflexed and rounded; median line feebly indicated. Scutellum finely and sparingly punctured. Elytra rather longer and broader than the prothorax, slightly increasing in width posteriorly, finely margined behind, moderately strongly and rather closely punctured, moderately thickly clothed with short grey pubescence; humeral angles not very prominent; posterior margins slightly sinuate near the external angles. Abdomen elongate, narrowed behind, finely and not very closely punctured; segments 1-4 moderately strongly and not very closely punctured, the others more finely and less closely punctured. Legs moderately robust, pale testaceous. Length 4½ mm.

Wagga Wagga (under bark, in early spring), Sydney, New South Wales.

6 Pelioptera.

Kraatz, Linn. Ent. XI., p. 55 (1857)—*Termitopora*, Motschulsky, Etud. Ent. p. 91 (1859).

Ligula short, broad, bifid. Paraglossæ slightly prominent. Maxillary palpi moderately long, 3rd joint longer than the 2nd, 4th joint small, subulate. Labial palpi 3-jointed, the 2nd joint short. Maxillæ with the internal lobe pubescent internally; external lobe pubescent near the apex. Head rounded, narrowed behind. Antennæ thickened towards the extremity, joints 4-10

transverse. Prothorax transverse. Elytra obliquely truncate behind. Abdomen parallel-sided. Legs with the intermediate coxæ remote; tarsi 4:5:5, the posterior pair with joints 1-4 gradually shorter.

20. PELIOPTERA SPECULARIS.

Pelioptera specularis, Fauvel, Ann. Mus. Genov. XIII., p. 579 (1878).

Parallela, subconvexa, nitidissima, parce griseo pubescens, nigra, capite, thorace elytrisque laevibus, hic circa latera et angulum externum parce subtilissime punctulatis, abdomine sparsim vix punctulato; antennis articulis 3 primis, palpis, thorace, elytris praeter angulos externos late, segmentisque tribus basalibus plus minusve piceis, pedibus testaceis; antennis sat tenuibus, vix incrassatis, articulo 4.° quadrato, 5-6 vix, 7-10 magis licet parum transversis, 11.° acuminato; capite maximo, thorace paulo angustiore, convexo, foveola disco medio parva; thorace transverso, convexo, antice paulo minus quam postice angustato, lateribus parum rotundatis, angulis omnibus indicatis, subacutis; elytris thoracis latitudine, hoc paulo longioribus, quadratis, parum convexis; abdomine elytris quarta parte angustiore, apice vix angustiore, segmentis 2-4 basi transversim profunde, 5-6 parum impressis, 7.° apice truncato. Long. 2½ mm. (*Fvl.*)

Sydney, New South Wales.

21. PELIOPTERA ASTUTA, sp. n.

Elongate, parallel, moderately convex, dark piceous, shining, sparingly clothed with short grey pubescence; first two joints of the antennæ, palpi and elytra dark reddish testaceous, the sides of the latter darker; legs pale testaceous.

Head transverse, finely and not very closely punctured. Antennæ short, somewhat thickened towards the extremity, 4th joint small, 5-10 transverse, 11th acuminate. Prothorax strongly transverse, moderately convex, very slightly narrowed behind, finely and rather closely punctured; sides gently rounded. Elytra considerably longer and rather wider than the prothorax, finely

and closely punctured; the suture feebly depressed near the scutellum. Abdomen strongly narrowed behind, very sparingly and finely punctured, the 6th segment rather more closely punctured; segments 2-4 strongly impressed at the base. Length 4 mm.

Lottah, Gould's Country, Tasmania (*Simson*).

7. CALODERA.

Mannerheim, Brachél. p. 85 (1830); Lacordaire, Gen. Col. II., p. 36.

Mentum strongly transverse, narrowed and slightly emarginate in front. Ligula short, bifid. Paraglossæ broader than long, rounded at the extremity. Maxillary palpi with the 2nd and 3rd joints sub-equal, the latter not much thickened. Labial palpi 3-jointed, the 2nd joint much shorter than the 1st and 3rd, the latter very slender. Maxillæ with the internal lobe armed at the extremity with 6 rather long spines. Mandibles unarmed. Head rounded, narrowed behind. Antennæ thickened towards extremity, 2nd joint rather longer than third, the following joints generally transverse, the 11th elongate-ovate. Prothorax narrowed behind, almost longer than broad, quadrangular or sub-oval. Elytra truncate behind, very indistinctly sinuate near the external angles. Abdomen parallel-sided or slightly narrowed behind. Legs moderately long; intermediate coxæ almost contiguous; tarsi elongate, 5:5:5, the posterior pair with the first joint elongate.

Under this name a number of species varying considerably in structure and *facies* have been associated. Many of the European species frequent very wet places, such as the margins of pools, and a few are found constantly in the nests of ants.

22. CALODERA INAEQUALIS.

Calodera inaequalis, Fauvel, Ann. Mus. Genov. X., p. 286 (1877).

Nitidula, sat convexa, parce subtiliter griseo-pubescens, nigro-aenea, antennarum articulo 1.° pedibusque squalide testaceis; elytris circa suturae apicem vix piceis; antennis robustis, articulis 7-8 quadratis, 9-10 vix transversis, 11.° sat parvo, oblongo; capite suborbiculato, inter oculos transversim medio impresso, crebre subtiliter, thorace densius vix asperatim, elytris paulo fortius punctatis; thorace capite sat latiore, vix latiore quam longiore, lateribus parallelis, ante medium fortiter coarctatis, angulis posticis parum obtusis, sulco longitudinali postice in fossulam latam dilatato; elytris thorace tertia parte latioribus, paulo longioribus, subquadratis, suturae basi apiceque utrinque vix torulosis; abdomine elytris quarta parte angustiore, nitidissimo, subacuminato, segmentis basi summa punctulatis ibique, praesertim basalibus, fortiter transversim sulcatis; ♂ 7.° supra apice truncato et subtiliter crenulato. Long. 4 mm. (*Fvl.*)

Melbourne, Victoria.

23. CALODERA CARISSIMA, sp. n.

Elongate, not very convex, dark reddish testaceous, shining, clothed with fine grey pubescence; antennæ, except the first three joints, pitchy; elytra and abdomen pitchy testaceous, with a greenish tinge.

Head sub-orbicular, finely and closely punctured, with a tolerably conspicuous transverse impression between the eyes. Antennæ with the first three joints reddish testaceous, the others pitchy; joints 1-3 elongate, 4-6 slightly longer than broad, 7th and 8th sub-quadrate, 9th and 10th slightly transverse, 11th not as long as the two preceding joints together, narrowed at the extremity. Prothorax slightly longer than broad, rather finely and very closely punctured, with a strongly impressed median line which is transversely dilated and more strongly impressed posteriorly; sides arcuately narrowed in front, the posterior two-thirds nearly straight. Elytra sub-quadrate, considerably broader than the prothorax, rather finely and closely aciculate-punctate, with a slight swelling on the disc just behind the middle. Abdomen somewhat narrowed behind, segments 2-5 with a row of strongly impressed punctures at the base, 6th segment rather strongly and not very closely punctured on the disc, the other segments sparingly and more finely punctured. Legs reddish testaceous. Length 4½ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

Appears, from description, to be allied to the foregoing species.

24. CALODERA AUSTRALIS.

Calodera australis, Fauvel, Ann. Mus. Genov. X., p. 287 (1877).

Forma *Ischnoglossae prolixae*, sed minor; nitidula, abdomine nitidissima, parce flavo pubescens, convexa, rufa, antennarum articulo primo, ano pedibusque testaceis; capite, antennis, elytris plus minusve circa angulum apicalem abdominisque segmentis 4-5 totis, 6.° que praeter apicem piceis vel nigro-piceis; antennis robustis, articulis 5-10 fortiter transversis, 11.° conico, sat magno; capite oblongo, inter oculos transversim parum impresso, parum dense subtiliter, thorace densius, elytris paulo fortius vix asperatim, abdomine vage subtiliter punctatis; thorace capite parum latiore, parum transverso, lateribus apice fortiter rotundatis, basi leviter angustatis, fovea basali sat lata lineaque longitudinali obsoleta; elytris thorace quarta parte latioribus, paulo longioribus; abdomine parallelo, segmentis basalibus vix impressis; ♂ segmento 7.° apice supra truncato, dense subtiliter crenulato, utrinque vix denticulato, subtus triangulariter vix prominulo. Long. 2½ mm. (*Fvl.*)

Adelaide, South Australia; Victoria.

25. CALODERA ABDOMINALIS.

Calodera abdominalis, Fauvel, Ann. Mus. Genov. XIII., p. 580 (1878).

Praecedente longior et angustior, paulo magis nitida, parce pubescens, antennis robustioribus, articulo 11.° apice rufo, capite, thorace segmentisque 2-4 totis rufo testaceis; thorace multo angustiore et longiore, haud transverso, capite vix latiore, lateribus a medio ad basim parallelis, antice fortius coarctato, angulis posticis subrectis, fovea basali latiore; elytris multo parcius pauloque fortius punctatis, abdomine magis angusto, parallelo, segmentis 2-4, 5.° minus, dimidia parte basali profunde transversim impresso

sulcatis ibique punctulatis, caeterum sublaevibus, 6.° 7.°que parce subtiliter punctulatis, pedibus gracilibus facile distinguenda. Long. 3⅓ mm. (*Fvl.*)

Australia.

26. CALODERA MACILENTA.

Calodera macilenta, Fauvel, Ann. Mus. Genov. XIII., p. 581 (1878).

Elongata, nitidula, longius dense fulvo pubescens, picea, antennis ferrugineis, articulis 2 primis, palpis tarsisque flavis, thorace, segmentorum marginibus, 6.° dimidia parte apicali, 7.° toto pedibusque rufis; antennis fortiter clavatis, articulis 4-10 fortiter transversis, 11.° crasso, apice rufo; capite minuto, ovali, thorace dimidio fere angustiore, parce subtilissime punctulato; thorace ovali, licet postice subtruncato, haud transverso, a medio ad apicem fortiter attenuato, circa basin subparallelo, angulis posticis obtusis, crebre sat fortiter, elytris vix crebrius paulo fortius, abdomine parcius vix subtilius punctatis; elytris thorace sat latioribus, paulo longioribus, circa suturam et apicem rufescentibus; abdominis paralleli segmentis 2-4, 5.° minus, profunde lateque transversim impresso-sulcatis. Long. 4 mm. (*Fvl.*)

Melbourne, Victoria.

27. CALODERA RUFICOLLIS.

Calodera ruficollis, Fauvel, Ann. Mus. Genov. XIII., p. 581 (1878).

A praecedente corpore praesertim antico nitidissimo, parce longius pubescente, statura minore, parallela, antennis, palpis, *thorace, ano pedibusque rufo-testaceis, antennis brevioribus,* articulis 4-10 adhuc magis transversis, brevissimis, capite nigro thoraceque vage, elytris parum dense sat fortiter, abdomine parcius punctatis; thorace breviore et latiore; parum transverso, angulis posticis rotundatis; elytris brevioribus, magis convexis, thorace paulo longioribus; abdomine circa apicem subattenuato, segmentis 2-4 praesertim multo minus, basi tantum, transversim impressis, 5.° integro distinguenda. Long. 3 mm. (*Fvl.*)

Sydney, New South Wales.

28. Calodera pyrrha, sp. n.

Elongate, moderately convex, sparingly covered with fine fulvous pubescence, pale castaneous; antennæ, except the first two joints, head, external apical angles of the elytra and the 4th, 5th and 6th abdominal segments piceous.

Head rather large, rather finely and closely punctured. Antennæ with the first two joints castaneous, the others piceous; joints 1-3 elongate, 4th very small and transverse, 5-10 broader and slightly transverse, 11th acuminate. Prothorax transverse, finely and closely punctured, with a large foveolate depression in the middle at the base; the sides gently rounded; the anterior angles strongly and the posterior feebly rounded. Elytra subquadrate, considerably broader and slightly longer than the prothorax, finely and closely aciculate-punctate; the external apical angles and the sides as far as the middle piceous. Abdomen nearly parallel-sided, finely and closely punctured, the posterior margin of the 6th segment testaceous. Legs pale castaneous. Length 4 mm.

Upper Hunter, New South Wales.

29. Calodera eritima, sp. n.

Elongate, moderately convex, bright reddish testaceous, sparingly covered with fine fulvous pubescence; antennæ, except the first two joints, pitchy; a large spot at the base of the elytra, the 5th and the basal half of the 6th abdominal segments pitchy black.

Head transverse, finely and not very closely punctured, the punctures rather more numerous near the sides. Antennæ with the first two joints testaceous; 2nd and 3rd joints about equal in length, 4th subquadrate, 5th to 10th transverse, 11th slightly narrowed and rounded at the extremity. Prothorax transverse, moderately strongly and not very closely punctured, less strongly punctured near the sides; sides gently rounded. Elytra subquadrate, considerably broader than the prothorax, moderately strongly and not very closely aciculate-punctate, with a rather large transverse pitchy black spot at the base of the suture common to both elytra. Abdomen nearly parallel-sided, moderately strongly and not very closely punctured, segments 2-5 with a row of rather strongly impressed punctures at the base, the 6th segment extremely finely and remotely tuberculose. Legs reddish testaceous. Length 3½-4 mm.

Wagga Wagga, South Country, New South Wales.

Allied to *Calodera pyrrha*, but easily distinguished, apart from its colouring, by its more strongly punctured upper surface, slightly longer third and fourth antennal joints, and by the absence of the foveolate depression at the base of the prothorax, which is the most conspicuous character in *C. pyrrha.*

A specimen in the Macleay Museum differs from the typical form in having all the abdominal segments, except the hindmargin of the sixth, pitchy. It must, I think, be regarded as a variety.

30. CALODERA AGLAOPHANES, sp. n.

Elongate, rather convex, reddish testaceous, shining, sparingly clothed with fine grey pubescence; elytra with the sides and suture, especially near the base, obscurely tinged with blue; abdomen rather bright steel-blue, the apical half of the 6th and the termination of the 7th segments reddish testaceous.

Head moderately transverse, rather strongly and closely punctured, not impressed between the eyes. Antennæ with the first three joints and the apex of the terminal joint reddish testaceous, the others pale pitchy; joints 1-3 somewhat elongate, 4-10 transverse, slightly increasing in width, 11th longer than the two preceding joints together, acuminate at the apex. Prothorax transverse, moderately strongly and closely punctured; the sides gently rounded; the anterior and posterior angles rounded. Elytra sub-quadrate, considerably broader than the prothorax, moderately strongly and closely aciculate-punctate. Abdomen slightly narrowed behind, rather finely, irregularly and not very closely punctured; segments 2-6 with a row of rather strongly impressed punctures at the base. Legs pale reddish testaceous. Length 3⅓ mm.

Port Lincoln, South Australia.

A very distinct species.

31. CALODERA CRIBRELLA.

Calodera cribrella, Fauvel, Ann. Mus. Genov. X., p. 287 (1877).

Praecedente [*australis*] paulo minor, tota nigra, parcius griseo pubescens, antennis piceis, pedibus squalide rufis, tarsis dilutioribus; antennis tenuioribus; capite non impresso, parcius aeque ac thorax fortiter, elytris dense subtiliter, abdomine crebre subasperatim punctatis; thorace multo angustiore, subcordato, magis convexo, paulo longiore quam latiore, basi foveolato, angulis posticis subrectis; elytris thorace tertia parte latioribus, vix longioribus; abdomine apice parum angustiore, nitidulo, segmentis 2-4 basi transversim fortiter impressis. Long. 2¼ mm. (*Fvl.*)

Sydney, New South Wales; Adelaide, Port Augusta, South Australia

32. CALODERA CORACINA.

Tachyusa coracina, Macleay, Trans. Ent. Soc. N.S.W. II., p. 135 (1871).

Elongate, not very convex, pitchy black, sparingly clothed with fine grey pubescence; head, prothorax and abdomen somewhat shining; first three joints of the antennæ and the legs dark reddish testaceous, tarsi paler.

Head finely and sparingly punctured, not impressed between the eyes. Antennæ rather short; joints 7-10 scarcely transverse. Prothorax slightly convex, about as long as broad, considerably narrowed behind, very finely and not very closely punctured, with a moderately large foveolate depression in the middle at the base; the posterior angles feebly reflexed. Elytra at the base considerably broader than the prothorax, widening posteriorly, rather finely and densely asperate-punctate. Abdomen nearly parallel-sided, slightly narrowed at the apex, finely and not very closely asperate-punctate. Length 2½ mm.

Gayndah, Queensland.

M. Fauvel appears to be right in his surmise that this species is allied to *Calodera cribrella*: indeed it would seem, judging from about eight or ten specimens which I have examined, that it is the northern representative of that species. It has the elytra a little more strongly and closely asperate-punctate, and the prothorax (which is distinctly foveolate behind) and head a trifle more highly polished.

33. CALODERA SIMSONI, sp. n.

Elongate, moderately convex, pitchy black, shining, sparingly clothed with fine black pubescence; antennæ and legs dark piceous.

Head transverse, narrowed behind, very finely and sparingly punctured. Antennæ with 2nd and 3rd joints equal, a little shorter than the first, 4-8 elongate, gradually decreasing in length, 9th and 10th subequal, about as broad as long, 11th elongate, slightly narrowed towards the extremity. Prothorax distinctly transverse, slightly narrowed behind, very finely, irregularly and sparingly punctured; the anterior angles rounded; the sides nearly straight. Elytra at the base much broader than the prothorax, widening posteriorly, with a few very fine indistinct punctures chiefly near the sides and apex; the suture somewhat depressed near the scutellum. Abdomen slightly narrowed behind, almost impunctate, finely and sparingly pubescent especially near the sides; segments 2-5 impressed at the base; 6th segment narrowly margined with testaceous. Length 3½ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

This species I propose to name after Mr. A. Simson of Launceston. It is characterized by its highly polished surface and by its long slender antennæ of which nearly all the joints are elongate. Its generic position must be considered provisional.

34. CALODERA PACHIA, sp. n.

Robust, short, slightly convex, pitchy black, shining, rather sparingly covered with fine griseous pubescence; antennæ, except the first three joints, piceous; legs dark reddish testaceous.

Head transverse, narrowed behind, finely and moderately closely punctured. Antennæ with the first three joints elongate, reddish testaceous; 2nd joint slightly longer than the 3rd, 4-6 very slightly longer than broad, 7-10 transverse, 11th narrowed towards the extremity. Prothorax transverse, slightly narrowed both in front and behind, moderately convex, finely, irregularly and not very closely punctured; the anterior angles strongly rounded; the posterior angles less strongly rounded. Elytra much narrower in front than behind, at the base considerably wider than the prothorax, finely and moderately closely punctured; the sides nearly straight. Abdomen short, somewhat narrowed posteriorly, strongly margined, finely and very sparingly punctured; the punctures mostly confined to the middle of the segments.

Length $2\frac{1}{3}$ mm.

Hobart, Tasmania.

Owing to their broad form I have had considerable doubt as to the generic position of this and the following species. I think, however, that for the present they are best placed in *Calodera.*

35. CALODERA ATYPHA, sp. n.

Rather robust, slightly convex, pitchy black, shining, sparingly covered with fine griseous pubescence; antennæ, except the first four joints, piceous; legs reddish testaceous.

Head transverse, narrowed behind, very finely and not very closely punctured. Antennæ with the first four joints reddish testaceous; similar in structure to those of the preceding species. Prothorax transverse, very finely and not very closely punctured; the anterior and posterior angles rounded; the sides gently arcuate. Elytra considerably narrowed in front, very finely and rather closely punctured; the sides nearly straight. Abdomen somewhat narrowed behind, strongly margined, extremely finely and very sparingly punctured. Length 2 mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

Nearly allied to the preceding species, but narrower in proportion to its length; the prothorax is less strongly rounded at its anterior angles and the upper surface is more finely punctured.

8. MYRMECOPORA.

Saulcy, Ann. Soc. Ent. France (4), IV., p. 429 (1864.)

Ligula rather elongate, bifid, acuminate. Paraglossæ not prominent. Maxillary palpi 4-jointed, the 4th very short. Labial palpi 3-jointed, the 2nd joint short. Maxillæ with the interior lobe provided with spines near the apex. Mandibles simple. Head constricted behind into a narrow neck. Legs rather long, slender ; tarsi 4:5:5, the posterior pair with the 1st joint elongate, nearly equal to the four succeeding joints together.

Allied to *Tachyusa*, but differing in the structure of the labial palpi, labrum (which is rounded in front) and posterior tarsi. The genus was founded on a species from the Mediterranean region and has been recorded from New Guinea as well as from Australia.

36. MYRMECOPORA SENILIS.

Myrmecopora senilis, Fauvel, Ann. Mus. Genov. XIII., p. 582 (1878).

Facie *Homalotam plumbeam* satis simulans, forma quasi *Ancyrophori ;* nigra, vix nitidula, corpore antico dense subtilissime brevissimeque griseo-subviridi pubescens, segmentorum marginibus omnibus parce sat longe griseo pilosulis ; antennis nigro piceis, tarsis obscure rufulis ; antennis elongatis, articulis 2-3 longioribus, aequalibus, sequentibus haud transversis, sensim magis conicis, 10.° vix transverso, 11.° oblongo ; capite exserto, lato, fortiter transverso, ab oculis ad basim sat angustato, crebre subtiliter punctato ; thorace capitis latitudine, obsolete punctato-alutaceo, haud transverso, tertia parte anteriore oblique fortiter truncato, dein circa basin sat angustato, angulis posticis subrectis, foveola basali transversim sulcato, sulco tenui longitudinali integro ; elytris amplis, subdepressis, thorace duplo fere latioribus et longioribus, omnium creberrime subtilissime punctulato-alutaceis ; abdomine elytris tertia parte angustiore, sat dense, apice parcius, subtiliter punctato, circa apicem parum attenuato ; segmentis (? ♂) praesertim 2-5 dorso medio magis elevato longitudinaliter subtilissime acuteque carinulatis. Long. $3\frac{2}{3}$ mm. *(Fvl.)*

Victoria.

9. OXYPODA.

Mannerheim, Brachél. p. 69 (1830) ; Lacordaire, Gen. Col. II., p. 35.

Mouth-organs similar to those of Homalota. Head not at all or feebly constricted behind, more or less sunk in prothorax. Antennæ with the 2nd and 3rd joints longer than the others. Prothorax large, sometimes narrowed in front, sometimes parallel at the sides. Elytra obliquely truncate behind and sinuate near the external angles. Abdomen either parallel-sided or narrowed behind. Legs moderately long , intermediate coxæ contiguous ; tarsi 5:5:5, the posterior pair with the 1st joint elongate.

This genus is represented in Europe by a large number of species and is known from North and South America, from Africa, and from widely separated localities in Asia. Our knowledge of Australian members of the genus is confined to the two species described by Fauvel; the form characterized by Redtenbacher under the name *Oxypoda bisulcata* appears to be a true *Aleochara*, and I find that *Oxypoda analis* belongs to the same genus.

37. OXYPODA VARIEGATA.

Oxypoda variegata, Fauvel, Ann. Mus. Genov. XIII., p. 584 (1878).

Colore *formosae* parum vicina, licet omnino alia ; rufo-testacea, subopaca, dense subtilissime fulvo pubescens, abdomine acuminato, antennis, articulis 2 primis exceptis, segmentis 4-5 sextique basi late nigro piceis ; capite nigro, elytris plus minusve infuscatis ; tota creberrime omnium subtilissime, elytris paulo fortius, punctata ; antennis sat brevibus, articulo 4.° parum, sequentibus fortius transversis, 11.° duobus praecedent ibusvix longiore ; capite latiusculo, brevi ; thorace fortiter transverso, capite tertia parte vix latiore, lateribus sat rotundatis, antice fortiter, basi parum angustatis, angulis posticis obtusis, supra scutellum obsolete bifoveolato, basi utrinque subsinuato ; elytris thorace vix latioribus, quarta parte longioribus. Long. 2⅓-2½ mm. (*Fvl.*)

Sydney, New South Wales.

38. OXYPODA VINCTA.

Oxypoda vincta, Fauvel, Ann. Mus. Genov. XIII., p. 584 (1878).

Minima, rufo-testacea, nitidula, abdomine nitido, vix attenuato, longius fulvo pubescente; capite praesertim prope oculos et vertice infuscato; cingulo abdominali nigro angusto, segmentum quintum praeter tertiam partem apicalem occupante; creberrime subtiliter, abdomine fortius multoque parcius, praesertim apice, subasperatim punctata; antennis parvis, brevissimis, articulis 4.° parum, 5-10 sat fortiter transversis, 11.° acuminato; capite latiusculo, brevi; thorace lato, brevissimo, capite tertia parte latiore, lateribus rotundatis, antice fortius quam basi angustato, angulis posticis obtusis; elytris thorace paulo longioribus, transversis; abdomine circa apicem vix nigro pilosulo. Long 1½ mm. (*Fvl.*)

New South Wales.

10. POLYLOBUS.

Solier, Gay's Hist. Chile, Zool. IV., p. 354 (1850); Lacordaire, Gen. Col. II., p. 157.

Mentum narrowed towards its extremity. Ligula broad, bifid. Maxillary palpi 4-jointed, the 3rd joint conical, the 4th shorter, narrow and filiform. Labial palpi 3-jointed, the terminal joint shorter than the 2nd, cylindrical. Maxillæ with the external lobe divided into several lobes (processes) at the apex. Mandibles provided internally with a denticulated membrane. Head short, retracted. Antennæ thickened towards the extremity, joints 4-10 obconical. Prothorax broadly transverse, narrowed in front, Elytra sinuate behind near the external angles. Abdomen either parallel-sided or narrowed behind. Legs rather short; tarsi 5:5:5.

This genus is distinguished by the structure of the external lobe of the maxillæ. It is largely represented in Chili and is another instance of an American genus finding its nearest allies in Australia.

39. POLYLOBUS CINCTUS.

Polylobus cinctus, Fauvel, Ann. Mus. Genov. X., p. 284 (1877.)

In genere latissimus, antice posticeque attenuatus, sat depressus, rufus, nitidulus, antennarum articulo ultimo, elytrisque, praeter humeros angulumque apicalem, piceis, abdominis nitidissimi segmentis 4-5 totis sextoque dimidia parte basali nigris; elytris minus nitidis, dense omnium subtilissime fulvo-pubescentibus; capite, thorace elytrisque praesertim omnium creberrime subtilissime punctatis; antennis brevibus, sat incrassatis, articulis 6-10 sensim leviter transversis; capite parvo, orbiculato; thorace fortiter transverso, capite tertia parte latiore, antice vix fortius quam postice angustato, lateribus angulisque fortiter rotundatis; *elytris capite dimidio latioribus*, thorace sat longioribus, planiusculis, angulo apicali profunde sinuatis; abdomine robusto, sublaevi, (♂?) segmento 6.° supra vix, 7.° fortius rugosule punctulato, hoc apice late subtriangulariter inciso, vix crenulato. Long. 3 mm. (*Fvl.*)

Victoria.

40. POLYLOBUS PALLIDIPENNIS.

Homalota pallidipennis, Macleay, Trans. Ent. Soc. N.S.W. II., p. 135 (1871).

Elongate, slightly convex, narrowed both in front and behind, testaceous, somewhat shining; antennæ testaceous; 4th and 5th abdominal segments piceous.

Head finely and not very closely punctured, the pubescence yellow and not very dense. Antennæ slightly thickened towards the extremity; joints 2-3 equal in length. 4th a little shorter, 5-10 transverse, 11th somewhat larger, acuminate. Prothorax strongly transverse, considerably narrowed in front, finely and closely punctured; sides arcuately rounded; posterior angles obtusely rounded. Elytra a little longer than the prothorax, at the base slightly narrower than the prothorax, widening posteriorly, finely and closely punctured, with a moderately large indistinct spot near the external apical angles; the sides feebly rounded; the posterior margin deeply sinuate just before the external angles which are rather strongly produced. Abdomen considerably narrowed behind, the first three segments finely and closely punctured, the others more strongly and less closely punctured. Legs pale testaceous. Length 2 mm.

Gayndah, Queensland; New South Wales.

41. POLYLOBUS SODALIS, sp. n.

Elongate, very slightly convex, somewhat narrowed both in front and behind, testaceous, somewhat shining; antennæ testaceous; head, elytra, and 4th and 5th abdominal segments dusky.

Head finely and rather closely punctured, the pubescence yellow. Antennæ slightly thickened towards the extremity, similar in form to those of the preceding species. Prothorax strongly transverse, a little more narrowed in front than behind, finely, irregularly and rather closely punctured; sides arcuately rounded; posterior angles rounded. Elytra considerably longer than the prothorax, narrower in front than behind, very finely and not very closely punctured; the sides feebly rounded; the posterior margin deeply sinuate just before the external angles which are rather strongly produced. Abdomen narrowed behind, finely and closely punctured. Legs pale testaceous. Length 1½ mm.

Sydney, New South Wales.

Apart from its smaller size and slightly more depressed form this species may be known from *Polylobus pallidipennis* by having the prothorax less narrowed in front and more closely punctured, the elytra dusky and the abdominal segments finely punctured throughout.

42. POLYLOBUS FLAVICOLLIS.

Homalota flavicollis, Macleay, Trans. Ent. Soc. N.S.W. II., p. 135 (1871).

Elongate, slightly convex, narrowed in front and behind, reddish testaceous, somewhat shining; antennæ fuscous, the base and apex reddish testaceous; head, elytra, except near the humeral angles, and 4th and 5th abdominal segments blue-black.

Head very finely and not very closely punctured, the pubescence yellow. Antennæ somewhat thickened towards the extremity; joints 2-3 nearly equal in length, 4th considerably shorter, 5-10 strongly transverse, 11th as long as the two preceding joints together, acuminate at the apex. Prothorax transverse, narrowed in front, finely and closely punctured, the pubescence very fine. Elytra longer than the prothorax, at the base about as wide as the prothorax, slightly broader behind, finely and closely punctured, a moderately large elongate reddish testaceous patch at the humeral angles extending obliquely towards the disc; the posterior margin deeply sinuate before the external angles which are strongly produced. Abdomen considerably narrowed behind, finely and closely punctured. Legs pale testaceous. Length 1¾ mm.

Gayndah, Queensland. A single specimen.

Allied to the preceding species.

43. POLYLOBUS INSECATUS.

Polylobus insecatus, Fauvel, Ann. Mus. Genov. XIII., p. 585 (1878).

Forma *Oxypodae exiguae*, sed tertia parte major, rufotestaceus, vix nitidulus, abdomine circa apicem nitido; omnium subtilissime flavopubescens, antennis praeter articulos 4 primos, capite abdominisque segmento 5.° nigro piceis, elytris maculatim oblique circa discum posterius piceolis; antennis parum incrassatis, vix pilosis, articulis 2-3 aequalibus, 4.° breviore, paulo longiore quam latiore, 5-7 subquadratis, 8-10 parum transversis, 11.° magno, conico, piceo; capite subtiliter minus dense, thorace elytrisque creberrime subtilissime, abdomine segmentis 2-4 crebre subtiliter, 5-6 parce magis perspicue punctatis, his parum nigro-pilosis; thorace fortiter transverso, transversim oblongo, parum convexo, antice magis angustato, angulis posticis rotundatis; elytris parum convexis, thorace paulo longioribus et latioribus; abdomine acuminato. Long. 2 mm. (*Fvl.*)

Gayndah, Wide Bay, Queensland; Blue Mountains, Sydney, New South Wales.

In the common form of the species to which I refer the above name the basal half of the sixth abdominal segment is piceous as well as the whole of the fifth segment; but one or two specimens taken in company with the typical form and agreeing with it in every other respect have only the fifth segment piceous.

44. POLYLOBUS LONGULUS, sp. n.

Elongate, rather convex, very slightly narrowed both in front and behind, reddish testaceous, shining; head, elytra and abdominal segments 4-6 pitchy black, the posterior margin of the 6th segment reddish testaceous.

Head rather narrow, finely and not very closely punctured. Antennæ testaceous. Prothorax not much broader than long, very slightly narrower in front than behind, very finely margined, finely and not very closely punctured; anterior and posterior angles rounded. Elytra at the base slightly wider than the prothorax, broader posteriorly, considerably longer than the prothorax, very finely and closely punctured; the posterior margin feebly sinuate before the external angles which are slightly produced. Abdomen very slightly narrowed behind, rather finely and not very closely punctured. Legs testaceous. Length 2½ mm.

Shelley's Flats, New South Wales.

Easily distinguished from any of the foregoing species by its rather long narrow form, by its short broad prothorax and by its evenly punctured pitchy black elytra; it is more closely allied to *Polylobus insecatus* than to any other species with which I am acquainted.

45. POLYLOBUS NOTUS, sp. n.

Rather broad, moderately convex, narrowed both in front and behind, reddish testaceous, shining; antennæ clothed with fuscous pubescence except at the base; head black; prothorax with four large punctures in the middle, the disc piceous; the external apical angles of the elytra and the 4th and 5th abdominal segments pitchy black.

Head rather broad, moderately strongly and very sparingly punctured. Antennæ somewhat thickened towards the extremity, the first four joints testaceous, the others clothed with fuscous pubescence; similar in structure to those of the preceding species. Prothorax transverse, as broad in front as behind, finely margined, highly polished and very sparingly pubescent, with four strong punctures on the disc, two considerably before the base and two somewhat nearer together at a similar distance from the anterior margin; anterior and posterior angles rounded. Elytra considerably wider and longer than the prothorax, finely, irregularly and not very closely punctured, the external apical angles broadly and the posterior margin narrowly margined with pitchy black; the posterior margin feebly sinuate before the external angles which are slightly produced. Abdomen a little narrowed behind, very finely and closely punctured. Legs testaceous. Length 2¾mm.

Sydney, New South Wales.

A very distinct species approaching *Polylobus insecatus*, but differing in its larger size, broader and more strongly punctured head, in its comparatively longer and dusky prothorax, and in having the external apical angles of the elytra black. *P. notus* and *P. acceptus* are more highly polished and less closely pubescent than any of the other species of the genus with which I am acquainted.

46. POLYLOBUS ACCEPTUS, sp. n.

Broad, moderately convex, somewhat narrowed both in front and behind, reddish testaceous, shining; antennæ fuscous, finely pubescent, the first three and the terminal joints testaceous; head, external apical angles of the elytra and the 4th and 5th abdominal segments pitchy black.

Head rather strongly, irregularly and very sparingly punctured. Antennæ slightly thickened towards the extremity; 1st and 2nd joints elongate, 3rd and 4th much smaller, 5-10 very slightly transverse, larger, 11th acuminate. Prothorax transverse, as broad in front as behind, finely margined, castaneous and highly polished, with four punctures on the disc similar to those of *P. notus.* Elytra finely, irregularly and not very closely punctured, more strongly punctured near the sides, the external apical angles broadly pitchy black. Abdomen very finely and not very closely punctured. Legs testaceous. Length 1½ mm.

Watson's Bay, Sydney, New South Wales.

Very closely allied to the preceding species. It may, however, be known by its smaller size, slightly more convex form and by its comparatively narrower head; all the reddish testaceous parts of the body are slightly darker in tint and the pitchy black markings at the angles of the elytra are rather more pronounced and slightly larger in extent.

47. POLYLOBUS FUNGICOLA, sp. n.

Rather broad, moderately convex, reddish testaceous, shining, moderately closely pubescent; head pitchy; the external apical angles of the elytra, the middle of the 2nd and 3rd and the whole of the 4th and 5th abdominal segments pitchy black.

Head moderately broad, sparingly punctured. Antennæ with the first four joints testaceous, similar to those of the preceding species. Prothorax transverse, somewhat narrowed in front, finely margined, closely punctured and rather thickly clothed with fulvous pubescence; anterior and posterior angles rounded. Elytra considerably wider than the prothorax, moderately strongly and closely punctured, with a pitchy black marking at the apex on each side, not reaching the suture; the posterior margin feebly sinuate before the external angles. Abdomen finely punctured. Legs testaceous. Length 2 mm.

Elizabeth Bay, Sydney; in phosphorescent fungus.

Allied to *Polylobus acceptus* and *P. notus*, but readily separated by its reddish testaceous prothorax, densely pubescent upper surface and more strongly punctured elytra.

48. POLYLOBUS OBESUS, sp. n.

Rather broad, moderately convex, narrowed both in front and behind, reddish testaceous, shining, rather thickly clothed with long grey pubescence; antennæ with the first four joints fuscous, the others reddish testaceous; head pitchy; 2nd, 3rd and 4th abdominal segments dusky, 5th segment pitchy, 6th and 7th pale testaceous.

Head transverse, rather narrow, with a few fine punctures in front. Antennæ moderately long, the 1st and 2nd joints elongate, 3rd and 4th somewhat shorter, 6th to 10th transverse, 11th acuminate. Prothorax broadly transverse, considerably narrowed in front, finely margined, very finely and sparingly punctured; sides arcuately rounded; posterior angles obtuse. Elytra a little longer than the prothorax, widening posteriorly, finely and sparingly punctured; the sides feebly rounded; posterior margin very slightly sinuate before the external angles. Abdomen rather finely and not very closely punctured. Legs testaceous. Length 2-2⅓ mm.

Sydney, New South Wales.

49. POLYLOBUS USITATUS, sp. n.

Rather broad, moderately convex, narrowed both in front and behind, pale reddish testaceous, shining, finely and rather closely pubescent; antennæ with joints 5-11 fuscous; head and 4th and 5th abdominal segments pitchy.

Head rather narrow, finely and moderately closely punctured. Antennæ with the first four joints testaceous, the other fuscous; 4th joint distinctly shorter than third. Prothorax broadly transverse, narrowed in front, finely margined, moderately strongly and closely punctured. Elytra a little longer than the prothorax, widening posteriorly, moderately strongly and closely punctured; posterior margin very slightly sinuate before the external angles. Abdomen not very strongly and moderately closely punctured. Legs testaceous. Length 2 mm.

Sydney, New South Wales.

In *facies* this species closely resembles the last. Besides the difference in the colour of the antennæ, &c., it is more strongly and much more closely punctured and the pubescence is much shorter and less dense.

50. POLYLOBUS APICALIS.

Polylobus apicalis, Fauvel, Ann. Mus. Genov. X., p. 285 (1877).

Praecedente [*cinctus*] angustior, nitidus, subparallelus, subconvexus, rufo testaceus, antennis praeter basin piceis, elytris macula magna nigra apicali a medio lateris ad suturae apicem intus producta, abdominis segmentis 2-3 vix medio, 4-5 totis, 6.° dimidia parte basali nigris; antennis articulis 7-10 parum transversis; capite nigro, nitido, vix punctulato, sat transverso; thorace brevissimo, dimidio latiore quam longiore, marginato, antice fortissime angustato, angulis posticis obtusis, crebre parum fortiter punctato, foveola basi latiuscula; elytris thorace vix latioribus, tertia parte longioribus, crebre fortius, vix rugosule; abdomine subparallelo, aequaliter dense minus fortiter punctatis. Long. 2¾ mm. (*Fvl.*)

Victoria.

51. POLYLOBUS TASMANICUS, sp. n.

Comparatively short, rather convex, less narrowed in front than behind, bright reddish testaceous, somewhat shining, rather densely clothed with fine fuscous pubescence; head, external apical angles of the elytra, 2nd to 5th and basal half of the 6th abdominal segments piceous; antennæ with joints 5-11 fuscous.

Head transverse, highly polished, finely and not very closely punctured. Antennæ rather short, 2nd joint rather longer than 1st, 3rd shorter and narrower, 4th short and broad, 5th to 10th transverse and gradually increasing in width, 11th acuminate at the extremity. Prothorax broadly transverse, considerably narrowed in front, finely margined, moderately strongly and rather sparingly punctured; posterior angles obtuse. Elytra considerably longer and somewhat broader than the prothorax, moderately strongly rugulose-punctate, rather closely pubescent, an indistinct triangular marking near the scutellum extending along the suture and the external apical angles broadly piceous. Abdomen rather strongly and closely punctured. Legs reddish testaceous. Length. 1½ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

A very distinct species apparently allied to *Polylobus apicalis.*

52. POLYLOBUS PARVICORNIS.

Polylobus parvicornis, Fauvel, Ann. Mus. Genov. XIII., p. 586 (1878).

Facie quadam *Oxypodae* parallelae, antennis brevibus, tenuibus colore et punctura a praecedentibus [*apicalis*] distinctus; subparallelus, convexiusculus, nitidus, sat dense breviter pubescens, piceus,

antennis, thorace, elytris obscure post scutellum subtriangulariter, segmentorum marginibus, ano pedibusque rufis; abdominis segmentis 2-4 obscure rufo-piceis ; antennis basi dilutioribus, articulis 4-5 subquadratis, 6-10 sensim brevioribus, fortiter transversis, 11.° acuminato ; capite dense subtiliter, thorace crebrius, elytris fortius dense, abdomine crebre fortiter subasperatim, segmento 6.° parcius, punctatis ; thorace brevissimo transversim ovali, capite tertia fere parte latiore, lateribus cum angulis fortiter rotundatis, basi supra scutellum parum foveolato ; elytris thorace vix latioribus, parum longioribus, sutura (? ♂) ante apicem vix elevata; abdomine parallelo, circa apicem parum angustato. Long. 2 mm. (*Fvl.*)

Victoria.

53. POLYLOBUS ATERRIMUS.

Polylobus aterrimus, Fauvel, Ann. Mus. Genov. XIII., p. 586 (1878).

A praecedentibus colore primo visu maxime distinctus; oblongus, antice posticeque attenuatus, convexus, nitidissimus, niger, antennarum basi aliquando picea vel piceo testacea, vix pubescens, abdomine sat dense nigro setoso ; antennis elongatis, tenuibus, parum incrassatis, articulis 2-3 elongatis, 4-6 longioribus quam latioribus, 7° parum, 8-10 vix magis transversis, 11.° tribus praecedentibus vix breviore ; capite thoraceque vage subtilissime, elytris sat dense subasperatim punctatis, segmentorum marginibus, praesertim 4-5, quasi denticulis 6-7 obsoletis supra asperulis, 6.° 7.° que laevibus ; thorace brevissime obconico, transverso, lateribus cum angulis posticis sat rotundatis, antice capite haud latiore; elytris thoracis basi paulo latioribus, hoc parum longioribus, abdomine fortiter attenuato. Long. 2 mm. (*Fvl.*)

King George's Sound.

11. PHLOEOPORA.

Erichson, Käf. Mark, I., p. 311 (1837) ; Lacordaire, Gen. Col. II., p. 38.

Mentum transverse, slightly emarginate in front. Ligula very short, bilobed, rather broad at the base. No visible paraglossæ.

Maxillary palpi very short, the 3rd joint a little shorter than the 2nd. Labial palpi 3-jointed, the 2nd joint about half as long as the 3rd, not much shorter than the 1st. Maxillæ rather short. Mandibles unarmed. Head orbicular, prominent, narrowed at the base. Antennæ rather short, somewhat thickened towards the extremity, the first three joints rather elongate, the 2nd not much longer than the 3rd. Prothorax a little narrower than the elytra, slightly narrowed behind. Elytra obliquely truncate behind, slightly sinuate near the external angles. Abdomen very slender, parallel-sided. Legs short; intermediate coxæ contiguous; tarsi 5:5:5, the first joint of the posterior pair slightly elongate, shorter than the 2nd and 3rd united.

In *facies* this genus resembles *Homalota* from which it is easily separated by having all the tarsi five-jointed. It is widely distributed.

54. PHLOEOPORA LAEVIUSCULA.

Phloeopora laeviuscula, Fauvel, Ann. Mus. Genov. XIII., p. 587 (1878).

Facie *corticalis*, sed colore et punctura omnino alia; parallela, subconvexa, rufula, nitida, corpore antico sat dense fulvo pubescente, capite, pectore, elytris segmentoque 5.° plus minusve piceis; antennarum basi, ano pedibusque testaceis; antennis parum incrassatis, articulis 4-10 aequaliter fortiterque transversis, 11.° magno, oblongo; capite utrinque sat dense obsoletissime, thorace creberrime obsolete, elytris dense subtilissime, abdomine parce subtiliter, segmentis basi densius, subtus dense sat fortiter punctatis; capite medio vix fossulato; thorace parum transverso, quadrato, angulis posticis rectis, basi utrinque sinuato, supra scutellum parum vel obsolete fossulato; elytris thorace quinta parte latioribus, quarta longioribus, abdomine parallelo, elytris tertia parte angustiore, segmentis 2-5 basi profunde, 6.° parum transversim impresso sulcatis. Long. 2⅓ mm. (*Fvl.*)

Melbourne, New South Wales.

55. PHLOEOPORA GRATIOSA.

Phloeopora gratiosa, Fauvel, Ann. Mus. Genov. XIII, p. 587 (1878).

Inter omnes statura minima, colore corporis et punctura elytrorum parca maxime distincta; sat depressa, parallela, nitida, rufo-testacea, parce flavo pubescens, elytris medio, capite praesertim postice, elytrorum vitta basali transversa, medium non attingente, piceolis; segmento 5.° toto 4.°que apice nigerrimis, 6.° basi vix infuscato; antennis parum incrassatis, articulis 4-10 sensim paulo brevioribus, transversis; capite vix alutaceo, parce subtiliter, thorace densius subtilissime, elytris vage sat fortiter, abdomine vage sat obsolete punctatis, segmento 6.° (? ♂) praeter basim parce asperato-punctato; thorace parvo, capite vix latiore, non transverso, ante medium parum latiore, dein circa basim sat angustato, angulis posticis indicatis, disco toto late sat obsolete depresso; elytris thorace tertia parte laticribus et longioribus, quadratis; abdomine his tertia fere parte angustiore, circa basim vix angustiore, segmentis 2-4 profunde transversim, 5.° minus impresso-sulcatis ibique impunctatis. Long. 2 mm. (*Fvl.*)

South Australia.

12. MYRMEDONIA.

Erichson, Käf. Mark, I., p. 286 (1837); Lacordaire, Gen. Col. II., p. 29.

Mentum transverse, slightly emarginate in front. Ligula very short, broad, bilobed; the lobes rounded. Paraglossæ large, acuminate, glabrous on the inner side. Maxillary palpi with the 3rd joint a little longer than the 2nd. Labial palpi 3-jointed, the 2nd joint somewhat shorter than 1st and 3rd. Maxillæ with the internal lobe membranous, corneous externally, terminating in three or four hooks; the external lobe much longer, slender and corneous. Mandibles unarmed. Head rounded. Antennæ robust, the 3rd joint longer than the 2nd, the apical joint often acuminate. Prothorax a little narrower than the elytra, with a transverse impression and a longitudinal furrow. Mesosternum rounded. Elytra slightly sinuate at the apex. Abdomen with

the terminal segment indistinct. Legs moderately long; intermediate coxæ remote; tarsi 4:5:5, the posterior pair with the 1st joint longer than the 2nd.

A genus of world-wide distribution. Some of the species are found in ants' nests.

56. MYRMEDONIA CLAVIGERA.

Myrmedonia clavigera, Fauvel, Ann. Mus. Genov. XIII., p. 588 (1878).

Brevis, antice attenuata, nitida, albo pilosa, abdomine supra glabro, polito, crasso, inflato, segmentis 2-4 praesertim basi transversim profunde sulcatis, capite elytrisque nigris, thorace ferrugineo, abdomine nigro piceo, antennis femorumque apice late piceis, illis articulis 4 primis pedibusque rufulis, articulo 11.° rufescente; antennis brevibus, maxime clavatis, articulo 4.° praesertimque 5-10 maxime transversis, latissimis; capite parvo, suborbiculato, basi constricto; oculis parvis; thorace parvo, angusto, tertia parte longiore quam latiore, capite paulo latiore, ovato, convexo, angulis posticis rotundatis; elytris thorace duplo latioribus, tertia parte brevioribus, convexis, subtiliter parce asperulis; abdomine medio elytris paulo latiore; segmento 7.° angusto, supra apice vix sinuato, subtus longe obtuseque producto, tarsis femorumque basi flavis. Long. 3½ mm. (*Fvl.*)

North Shore, Sydney, New South Wales.

During September last I found a single specimen of this species in the nest of a small red ant; it appears to be not uncommon in the neighbourhood of Sydney as specimens are contained in most of the collections I have seen.

57. MYRMEDONIA INSIGNICORNIS.

Myrmedonia insignicornis, Fauvel, Ann. Mus. Genov. XIII., p. 589 (1878).

Facie et colore *Porum ferrugineum* satis simulans, sed capite basi constricto et caeteris omnino diversa; angusta, elongata, tota rufa, nitida, oculis nigris; corpore antico lateribus piloso, licet

supra sparsim flavo pubescente, abdomine sat dense breviter flavo pubescente; capite utrinque vage, thorace elytrisque sparsim fortiter, abdomine sat dense multo subtilius, segmento 8.° crebre, punctatis; antennis fusiformibus, crassulis, brevibus, articulis connexis, 1.° crasso, 5-9 parum transversis, 10.° duobus praecedentibus fere longiore, 11.° praecedente duplo longiore, attenuato, apice flavo; capite fortissime transverso, subquadrato; oculis magnis; fronte late profundeque impressa; thorace subquadrato, capitis latitudine, circa basim parum angustato, lateribus vix sinuatis, angulis omnibus rotundatis, prope angulum posticum utrinque foveolato, basi summa supra scutellum transversim impresso-foveolato; elytris thorace quarta parte latioribus, vix longioribus, subquadratis; abdomine elytris sat angustiore, parallelo, apice vix attenuato, segmentis 3-4 basi, 5-7 medio latius transversim impressis, septimi margine postice quasi dentatim producto, 8.° apice obtuso. Long. 5½ mm. (*Fvl.*)

Australia.

13. SILUSA.

Erichson, Käf. Mark, I., p. 377 (1837); Lacordaire, Gen. Col. II., p. 45.

Mentum broad, rather strongly emarginate in front. Ligula slender, filiform, entire. No visible paraglossæ. Maxillary palpi with the 3rd joint a little longer than the 2nd, the terminal joint very small, subulate. Labial palpi elongate, 2-jointed, the 2nd joint membranous at the apex, slightly incrassate. Maxillæ with the lobes unequal; the internal lobe very long, cultriform, the upper part of the inner margin with short closely-placed spines; the external lobe much shorter, broad, membranous and strongly pubescent at the extremity. Mandibles unarmed. Labrum very small. Head slightly narrowed behind. Antennæ rather short, somewhat thickened towards the apex, the 2nd and 3rd obconical. Prothorax broadly transverse, sides slightly rounded, with a transverse depression at the base. Elytra truncate behind, strongly emarginate near the external angles. Abdomen parallel-sided. Legs rather short; intermediate coxæ near together; tarsi 4:4:5, the posterior pair with joints 1-4 subequal.

This genus is composed of a small number of species and is widely distributed. In *facies* it approaches *Aleochara*, but differs in the arithmetic of the tarsi.

58. SILUSA MELANOGASTRA.

Silusa melanogastra, Fauvel, Ann. Mus. Genov. XIII., p. 590 (1878).

Crassiuscula, antice magis, postice minus attenuata, convexa, nitida, rufo testacea, parum dense flavo pubescens; antennis articulis 5-11, abdomineque, praeter segmentorum margines, sexti dimidiam partem apicalem septimumque totum, nigricantibus; antennis brevibus, incrassatis, articulis 4.° quadrato, 5-10 sensim latius fortiter transversis, 11.° breviter conico; capite obsolete, thorace crebre parum fortiter, elytris asperulis fortius dense, abdomine parcius subtiliter punctatis; thorace fortiter transverso, capite tertia parte latiore, transversim subovali, lateribus sat rotundatis, antice magis quam postice angustatis, angulis posticis subrotundatis; elytris thorace paulo latioribus et longioribus, transversis; abdominis segmentis 2-3 basi transversim profunde, 4-6 sensim minus impressis; ♂ segmentis 6-7 supra dense granulato-asperatis. Long. $2\frac{1}{3}$-$2\frac{1}{2}$ mm. (*Fvl.*)

Ferndale, South Yarra, Melbourne, Victoria; Port Frederick, Tasmania, abundant *in stercore.*

59. SILUSA PALLENS.

Silusa pallens, Fauvel, Ann. Mus. Gen. XIII., p. 590 (1878).

A praecedente magnitudine minore, forma parallela, multo minus convexa, colore toto flavo, segmentis 2-6 basi vix obscuris, punctura capitis thoracisque fortiore, hoc antice multo minus angustato, angulis posticis subrectis, lateribus subparallelis, disco subdepresso, elytris longioribus, non transversis, abdomine subparallelo, fortius aequaliter licet parcius asperatim punctato sat facile distincta. Long. $2\frac{1}{3}$ mm. (*Fvl.*)

Sexus differentia latet.

Sydney, New South Wales.

14. PLACUSA.

Erichson, Käf. Mark, I., p. 370 (1837) ; Lacordaire, Gen. Col. II., p. 45.

Mentum transverse, narrowed and slightly emarginate in front. Ligula broad, entire and rounded. Paraglossæ very short, acuminate. Maxillary palpi with the 2nd and 3rd joints subequal. Labial palpi 2-jointed, the first joint rather large, the 2nd much narrower. Maxillæ with the spines on the inner lobe not closely placed, in other respects similar to those of *Homalota*. Mandibles unarmed. Labrum transverse, truncate in front. Head sub-triangular, narrower than the prothorax. Antennæ increasing in width towards the extremity, 1st and 2nd joints obconical. Prothorax broadly transverse, often bi-sinuate at the base. Elytra truncate behind. Abdomen parallel-sided or slightly narrowed behind. Legs short; intermediate coxæ near together; tarsi 4:4:5, the posterior pair with the 1st joint equal to the 2nd and 3rd together.

60. PLACUSA TRIDENS.

Placusa tridens, Fauvel, Ann. Mus. Genov. XIII., p. 574 (1878.)

Magnitudine et facie *Homalotae caelatae* minimis exemplariis subsimilis, angustula, elongata, parum nitidula, dense fusco pubescens, picea, capite nigricante, antennarum articulis 3 primis, segmentorum marginibus anguste, ano latius pedibusque testaceis; antennis robustis, articulo 4.° maxime transverso, 5-10 hoc latioribus, fortiter transversis, aequalibus, 11.° elongato, subacuminato ; capite, thorace elytrisque crebre subtiliter, abdomine densius subtiliusque punctatis ; capitis disco vix impresso ; thorace hoc sat latiore, fortiter transverso, lateribus parum rotundatis, disco in ♂ parum longitudinaliter depresso ; elytris thorace sat latioribus, quarta parte longioribus ; abdomine parum attenuato, nitidulo ; ♂ segmento 7.° supra medio furcatim sat breviter trispinoso, utrinque profunde sinuato, spina extus longiore gracili

arcuata, subtus triangulariter producto; ♀ supra triangulariter producto, utrinque profunde sinuato, extus denticulato, subtus obtusius producto. Long. 1½-1⅝ mm. (*Fvl.*)

Sydney, New South Wales.

61. PLACUSA TENUICORNIS.

Placusa tenuicornis, Fauvel, Ann. Mus. Genov. XIII., p. 575 (1878).

Praecedente paulo minor, nitidula, paulo fortius parciusque punctata, parcius pubescens, thorace abdomineque dilutioribus, squalide flavo-piceis, hoc cingulo piceo parum indicato; antennis longioribus, tenuibus, articulo 4.° parum transverso, sequentibus parum latioribus, sensim vix brevioribus, 8-10 sat transversis, 11.° brevius ovato; thorace breviore, lateribus angulisque magis rotundatis; ♂ segmento 7.° supra medio parum quadridentato, utrinque sinuato, extus breviter spinoso. Long. 1½ mm. (*Fvl.*)

Australia.

15. DABRA, gen. nov.

Mentum transverse, short, narrowed and moderately strongly emarginate in front. Ligula rather long, slender, bifid. Paraglossæ very short. Labial palpi 3-jointed, the basal joint rather broad, the 3rd about as long but much narrower than the preceding joint. Maxillary palpi rather short, 1st joint very small, 3rd considerably longer than the 2nd, 4th joint very small and narrow. Maxillæ with the internal lobe membranous and strongly ciliate on the inner side almost throughout its length, corneous externally, and terminating in a fine hook; external lobe slightly longer than the other, ciliate at its extremity. Mandibles simple, gradually curved. Head sunk in the prothorax, rather strongly produced in front. Antennæ short, moderately robust, 1st joint enlarged, not quite as long as three following joints together, 2nd longer than 3rd, 4-10 transverse, the terminal joint elongate and acuminate at the apex. Prothorax rather strongly emarginate in front, convex on the disc, flat at the sides which are provided with setæ; the posterior margin bisinuate, the angles somewhat produced. Elytra

truncate behind, sinuate near the external angles which are moderately produced; the sides provided with setæ. Abdomen narrowed behind, with lateral setæ. Legs rather short; intermediate coxæ near together; tarsi 4:5:5.

This genus is founded on two species found in ants' nests in West Australia and is allied to the European genus *Dinarda* the species of which are found in similar situations. It may be distinguished by its more attenuated setose body; more strongly produced head; and by certain differences in the comparative lengths of the joints of the antennæ and maxillary palpi, particularly the enlarged basal joint of the former and the elongate third articulation of the latter.

62. DABRA MYRMECOPHILA, n. sp.

(Plate VII., fig. 2.)

Elongate, moderately convex, ferruginous, somewhat shining, finely and very closely punctured, very finely pubescent, the sides strongly setose; antennæ with joints 4-10 dark ferruginous.

Head broadly transverse, finely and closely punctured. Antennæ with the first three and the apical joints testaceous, the latter as long as the three preceding joints together. Prothorax at the base about twice as broad as long, arcuately narrowed in front, decidedly convex on the disc, flattened laterally, very finely and closely punctured; the anterior angles obtuse; the sides furnished with seven or eight erect setæ; the posterior angles moderately produced. Elytra at the base slightly narrower than the prothorax, somewhat broader posteriorly, finely and very closely punctured; the sides slightly reflexed and furnished with three or four erect setæ; posterior margin rather deeply sinuate just before the external angles which are moderately strongly produced. Abdomen moderately narrowed behind, extremely finely and not very closely punctured; each segment with two or three lateral setæ; segments 2-5 with a row of fine setigerous punctures on the posterior margin; 6th segment with two setigerous punctures near the posterior margin, one on each side of the middle. Legs ferruginous; tarsi pale testaceous. Length $2\frac{3}{4}$ mm.

Fremantle, King George's Sound, West Australia; in ants' nests.

Some specimens have the elytra and abdomen of a much darker ferruginous colour than the rest of the body.

63. DABRA CUNEIFORMIS, sp. n.

Ferruginous, very strongly narrowed behind, moderately convex, somewhat shining, very finely pubescent, the sides setose; head, prothorax and elytra very finely and closely punctured; abdomen dark ferruginous, shining, extremely finely and sparingly punctured.

Head broadly transverse, very finely and closely punctured. Antennæ reddish testaceous, the apical joint considerably longer than the four preceding joints together, acuminate at the extremity. Prothorax at the base more than twice as broad as long, slightly narrowed in front, moderately convex on the disc, flattened near the sides, very finely and closely punctured; the sides furnished with seven or eight short erect setæ; the posterior angles moderately produced. Elytra about as long as the prothorax, finely and closely punctured; the sides somewhat reflexed and furnished with three or four erect setæ; posterior margin deeply and rather abruptly sinuate just before the external angles which are strongly produced. Abdomen strongly narrowed behind, extremely finely and very sparingly punctured; the lateral setæ and setigerous punctures arranged as in the preceding species. Legs reddish testaceous. Length 2-$2\frac{1}{2}$ mm.

King George's Sound, West Australia; in ants' nests.

This species is closely allied to *Dabra myrmecophila* in whose company it has been taken, but can be separated at a glance on account of its wedge-like form and less convex upper surface; the lateral setæ are not so long, the external angles of the elytra are more strongly produced and the terminal joint of the antennæ is comparatively longer.

16. ALEOCHARA.

Gravenhorst, Col. Micr. p. 67 (1802); Lacordaire, Gen. Col. II., p. 40; Kraatz, Linn. Ent. XI., p. 17 (1857).

Mentum very short, narrowed and slightly emarginate in front. Ligula very short, broad, bifid. Maxillary palpi 5-jointed, the 2nd and 3rd joints subequal, the 5th very small. Labial palpi 4-jointed, the 1st joint longer than the others, the 4th very small. Maxillæ like those of Homalota. Mandibles unarmed. Labrum transverse, truncate in front. Head ovate, retracted, not narrowed behind. Antennæ short, thickened towards the extremity, 1st, 2nd and 3rd elongate, the following, with the exception of the 11th, transverse. Prothorax broadly transverse, narrowed in front, rounded at the sides. Elytra slightly rounded behind. Abdomen either parallel-sided or narrowed behind. Legs rather short; intermediate coxæ somewhat remote; tarsi 5:5:5, first joint of posterior pair distinctly longer than 2nd.

This is a genus of world wide distribution, but is better represented in the old than in the new world. The Australian species do not seem to differ in habits from those of Europe being found under dead birds, mammals, &c., and in any decaying animal or vegetable matter.

Section 1.—*Prothorax with two impressed rows of punctures.*

64. ALEOCHARA SPECULIFERA.

Aleochara speculifera, Erichson, Wiegm. Archiv. VIII., p. 134 (1842).

Elongate, moderately broad and convex, shining black, tinged with brassy green; prothorax with two deeply impressed longitudinal rows of punctures on the disc; elytra strongly and rather closely punctured, a large discal patch and the sides near the humeral angles highly polished and free from punctures.

Head somewhat depressed between the eyes, strongly, irregularly and not very closely punctured near the sides, almost destitute of punctures on the disc. Antennæ with the second joint a little more than half as long as the third, 4th shorter, 5-10 strongly transverse. Prothorax strongly transverse, slightly narrowed in front, rather strongly margined behind, with a deeply impressed row of punctures on each side of the middle, the sides broadly and rather strongly depressed, strongly and closely punctured, the anterior and posterior angles rounded, the base feebly bisinuate. Scutellum closely and rather strongly punctured at the base, impunctate at the hind-margin. Elytra not longer than the prothorax, strongly and densely punctured, a longitudinal patch on each side of the suture extending from just behind the base to the apical two-thirds and the lateral margins shining and impunctate. Abdomen closely and very finely punctured; 7th segment more strongly and rather sparingly punctured. Legs black, tarsi piceous. Length 4½-6 mm.

Upper Hunter, New South Wales; Port Frederick (on the sea-shore under a dead gull), Tasmania; an abundant species.

This species is easily recognised by the large highly polished patch on the disc of each elytron.

65. ALEOCHARA PUNCTUM.

Aleochara punctum, Fauvel, Ann. Mus. Genov. XIII., p. 593 (1878.)

Minimis exemplariis *fuscipedis* forma satis vicina, ab omnibus omnino distincta; nigra, nitidissima, antice posticeque attenuata, parce griseo pubescens, antennarum articulis 2 primis, segmento 7.° summo apice pedibusque plus minusve rufo-testaceis; antennis brevibus, sat incrassatis, articulo 3.° apice piceo, basi rufo, 4.° vix, 5.° magis, 6-10 fortiter transversis, 11.° acuminato; capite utrinque parce parum profunde, thorace vage paulo fortius, elytris parum dense fortiter subsquamatim, abdomine disperse subtiliter, punctatis; segmentis 2, 3, 4, 6, 7 disco medio laevibus; thorace sat transverso, antice fortiter, postice minus angustato, sulcis 2 longitudinalibus basi profunde impressis, medio et antice evanescentibus, punctis 4 majoribus, quadratim positis; angulis posticis sat rotundatis, basi fortiter marginata; scutello vix punctulato; elytris thorace vix latioribus et longioribus, transversis; abdomine attenuato, lateribus breviter nigro piloso. Long. 4½ mm. (*Fvl.*)

Illawarra, New South Wales; Tasmania.

A single individual from Tasmania agrees in most particulars with Fauvel's description quoted above, but is somewhat smaller in size (measuring only 3¾ mm.) and has the antennæ wholly testaceous.

66. ALEOCHARA BISULCATA.

Oxypoda bisulcata, Redt. Reise Novara, Zool. II., p. 27 (1867).
Aleochara bisulcata, Fauvel, Ann. Mus. Genov. X., p. 289 (1877).

Nigra, nitida, antennarum basi, ano pedibusque piceo-testaceis, elytris fulvis; capite rotundato, thorace multo angustiore, polito, punctis inter oculos dimidiaque parte postica grossis notato; antennis thoracis mediam partem vix attingentibus, circa apicem sat fortiter incrassatis, articulis 2-3 elongatis, aequalibus, caeteris latioribus quam longioribus, 11.° ovali, attenuato; thorace dimidio latiore quam longiore, antice posticeque angustato, antice recte truncato, angulis maxime obtusis postice omnino rotundato, punctis grossis utrinque irregulariter notatis, disco sulcis duobus longitudinaliter medio punctis grossis confluentibus interruptis; scutello triangulari, basi punctis aliquot notato; elytris latioribus quam longioribus, thorace longioribus, glabris, punctis sat grossis parum profunde parceque notatis; abdomine parallelo, glabro, segmentis subtiliter parce punctatis. Long. 3⅓ mm.

Insectum *Aleocharae genuinae* maxime simile, sed palpis labialibus 3-articulatis (*Rt.* tr. *Fvl.*)

Sydney, New South Wales; Port Lincoln, South Australia.

If the specimen from Port Lincoln is correctly referable to *Aleochara bisulcata*, which I see no reason to doubt, as it agrees very well with the description, the small terminal joint of the labial palpi must have escaped the observation of Redtenbacher. It is allied to *A. punctum*, but is shorter and rather more convex; the prothorax is broader, less narrowed in front and not so densely punctured at the sides; the elytra and abdomen are more finely punctured.

67. ALEOCHARA ACTAE, sp. n.

Elongate, moderately broad, and convex, pitchy black, shining, prothorax with two moderately deeply impressed rows of punctures on the disc; elytra, except near the base, antennæ and legs dark reddish testaceous.

Head rather broad, strongly impressed between the eyes, moderately strongly, irregularly and closely punctured near the base of each antenna, almost destitute of punctures in the middle. Antennæ, except the first three joints, rather thickly covered with fine fuscous pubescence; the basal joint rather large, the second as long as the third, 4-10 considerably shorter, transverse, the terminal longer than the two preceding together, rounded at the extremity. Prothorax broadly transverse, slightly narrowed in front, rather strongly margined behind, very sparingly clothed with long yellow pubescence, with a rather deeply impressed longitudinal row of punctures on each side of the middle and an irregular patch of equally strong punctures on each side at the base extending to beyond the basal half; the anterior and posterior angles rounded; the posterior margin very feebly bisinuate. Scutellum impunctate. Elytra about as long as the prothorax, reddish testaceous, the base dusky, strongly, irregularly and not very closely punctured, sparingly covered with rather long yellow pubescence, a longitudinal patch on each side of the suture near the base and the lateral margins very sparingly punctured. Abdomen closely and very finely punctured, sparingly pubescent; 7th segment narrowly margined with testaceous. Length 4½ mm.

Sydney, New South Wales; on the sea-shore under decaying sea-weed.

Differs from *Aleochara bisulcata*, to which it is evidently allied, in size and colour; the head is deeply impressed and the punctures forming the longitudinal rows on the prothorax are more closely united; the elytra are much more strongly, less closely and more regularly punctured than those of the common *A. speculifera*.

Section 2.—*Prothorax without impressed rows of punctures.*

68. ALEOCHARA HAEMORRHOIDALIS.

Aleochara haemorrhoidalis, Guérin, Voy. Coquille, Ins. II., p. 63, pl. 1 fig. 24; Boisduval, Voy. L'Astrolabe, II., p. 57 (1835).

Black, shining, with a steel-blue or bronzy-green tinge, moderately convex, sparingly clothed with short fuscous pubescence; prothorax and elytra rugose-punctate; abdomen highly polished, apical half of the 6th and the whole of the 7th segment reddish testaceous.

Head strongly and rather closely punctured. Antennæ rather strongly clavate, joints 5-10 broadly transverse, the terminal joint narrowed but not sharply pointed at the extremity. Prothorax strongly transverse, narrowed in front, moderately strongly margined behind, strongly rugose-punctate, very indistinctly impressed in the middle near the base; anterior and posterior angles rounded. Scutellum small. Elytra transverse, broader but not longer than the prothorax, a little more finely and closely rugose-punctate than the prothorax. Abdomen broad, only slightly narrowed behind, sparingly and moderately strongly asperate-punctate. Legs black, tarsi ferruginous. Length 4½-6½ mm.

Gayndah, Queensland; Bombala, Penrith (under a dead Wallaby), Sydney, New South Wales; Tasmania, *in stercore*. An abundant species in the immediate neighbourhood of Sydney.

69. ALEOCHARA BRACHIALIS.

Aleochara brachialis, Jekel. Col. Jekel, I., p. 39 (1873).

Statura et magnitudine *fuscipedis*, nigro picea, parce breviter fusco-setosa, parum nitida, antennarum articulis 3 primis, tibiis anticis tarsisque obscure rufis; coxis femoribusque anticis, segmentis 6-7 (penultimi basi excepta) ochraceis; antennis ab articulo 4.° abrupte latis, articulis intermediis valde transversis, plus duplo latioribus quam longioribus, 11.° elongato-ovato, non acuto, capite laxe sat profunde, thorace elytrisque crebrius rugoso-punctatis, hoc basi marginato; abdomine profunde remotius subaciculato-punctato, punctis setigeris ut dermi partes coloratis. Long. 6 mm. (*Jekel*).

Wide Bay, Queensland; Sydney, New South Wales.

If I am correct in my indentification of this species it is very nearly allied to *Aleochara haemorrhoidalis.* It is pitchy black in colour, less strongly punctured (except the abdominal segments which are rather more strongly punctured) and the base of the antennæ and anterior, and in some individuals the intermediate and posterior, legs are reddish testaceous; the antennæ in the specimens before me do not appear to afford any distinctive characters.

70. ALEOCHARA MASTERSI.

Aleochara Mastersii, Macleay, Trans. Ent. Soc. N.S.W. II., p. 136 (1871.)

Elongate, rather narrow, moderately convex, dark piceous, shining, finely and not very closely pubescent; elytra finely rugose-punctate; 6th abdominal segment narrowly margined with testaceous; antennae and legs dark reddish testaceous.

Head finely and rather closely punctured. Antennæ similar in structure to those of *A. haemorrhoidalis,* the three basal joints paler than the others, the apical joint sharply pointed. Prothorax strongly transverse, considerably narrowed in front, strongly margined behind, finely and closely punctured, sparingly clothed with fine fuscous pubescence especially near the sides, the anterior and posterior angles obtuse. Scutellum very small, finely punctured. Elytra transverse, slightly shorter than the prothorax, finely rugose-punctate, moderately closely pubescent. Abdomen rather long, narrowed posteriorly, strongly and not very closely asperate-punctate. Length 6 mm.

Gayndah, Queensland. A single specimen.

Closely allied to *Aleochara brachialis* which it resembles in having the antennæ and legs of a reddish testaceous colour. It is narrower and rather more attenuated posteriorly, is more finely punctured and has the abdomen of a shining black colour with the exception of a narrow testaceous basal margin to the sixth segment.

71. ALEOCHARA INSUAVIS, sp. n.

Elongate, rather narrow, moderately convex, shining black, finely and sparingly clothed with black pubescence; prothorax broadly transverse and finely margined behind; elytra extremely finely and not very closely punctured; 6th abdominal segment narrowly margined with testaceous; antennæ and legs dark reddish testaceous.

Head finely and not very closely punctured. Antennæ similar to those of *A. haemorrhoidalis.* Prothorax strongly transverse, nearly twice as broad as long, a little narrowed in front, extremely finely punctured, with a dark fuscous pubescence, the anterior and posterior angles obtuse. Scutellum short and rather broad, very finely punctured. Elytra transverse, decidedly longer than the prothorax, extremely finely and not very closely aciculate-punctate, with a fine and rather long fuscous pubescence. Abdomen very little narrowed behind, finely and sparingly punctured. Length 3½ mm.

Monaro, New South Wales. Two specimens, *in stercore.*

This species, although closely allied to the three last, especially to *Aleochara haemorrhoidalis* which it most resembles in form, may be easily separated by its short and strongly transverse prothorax; it is much smaller and the prothorax and elytra are extremely finely punctured; the pubescence is longer and the abdomen is not asperate-punctate.

72. ALEOCHARA ANALIS.

Oxypoda analis, Macleay, Trans. Ent. Soc. N.S.W. II., p. 135 (1871.)

Elongate, narrowed both in front and behind, moderately convex, dark piceous, shining, sparingly clothed with fine fuscous pubescence; prothorax rather finely and extremely closely punctured, the anterior margin and the sides narrowly margined with testaceous; elytra finely and very closely rugose-punctate; 6th abdominal segment margined with testaceous, 7th wholly reddish testaceous; legs reddish testaceous.

Head finely, closely and regularly punctured. (Antennæ wanting.) Prothorax strongly transverse, considerably narrowed in front, finely and not very strongly margined behind, very finely and sparingly pubescent, anterior and posterior angles obtuse

Scutellum very small. Elytra considerably shorter than the prothorax, dark piceous, finely and very closely rugose-punctate, the pubescence rather long. Abdomen narrowed behind, moderately strongly and rather closely asperate-punctate. Length 4½ mm.

Gayndah, Queensland. A single specimen.

Although closely allied to *Aleochara Mastersi* this species may be readily distinguished from it by having the anterior margin and sides of the prothorax bordered with testaceous and its whole upper surface more closely punctured; the prothorax is less strongly margined behind and much more closely and, if anything, a little more strongly punctured.

I have carefully examined the mouth-organs of the type specimen in the collection of the Australian Museum and find that the labial palpi are composed of four joints of which the last is extremely small, a character sufficient to show that this species finds its place in the genus *Aleochara*.

73. ALEOCHARA BALIOLA, sp. n.

Elongate, strongly narrowed both in front and behind, slightly convex, shining black, with a coppery tinge; prothorax strongly narrowed in front; elytra dark piceous, finely and moderately closely rugose-punctate; 6th abdominal segment margined with pale testaceous; legs dark reddish testaceous.

Head moderately strongly and closely punctured in front, less closely punctured near the base. Antennæ with the three basal joints reddish testaceous, the others piceous and clothed with fine grey pubescence; the 1st and 2nd joints narrow and of about equal length, the 3rd shorter and somewhat broader, joints 4-10 transverse and slightly increasing in breadth, terminal joint rounded at the extremity, not sharply acuminate. Prothorax transverse, strongly narrowed in front, finely and moderately strongly margined behind, rather finely, irregularly and not very closely punctured, sparingly clothed with fine grey pubescence, a slight indication of a raised median line. Scutellum small, finely punctured. Elytra transverse, at the base considerably broader than the prothorax, considerably narrower in front than behind, moderately strongly rugose-punctate, rather closely covered with fine grey pubescence. Abdomen narrowed behind, finely and sparingly punctured, segments 2-5 with a row of fine setigerous punctures on the posterior margins. Length 4½ mm.

Lottah, Gould's Country, Tasmania. (*Simson.*)

This species may be distinguished from the other Australian members of the genus by its acuminate form, broad elytra and finely and sparingly punctured abdomen.

74. ALEOCHARA MARGINATA.

Aleochara marginata, Fauvel, Ann. Mus. Genov. X., p. 291 (1877).

A. fuscipedis minimis exemplariis subsimilis, nigra, thorace nigro-piceo, basi lateribusque late, antennis praesertim basi, palpis, elytris totis, segmentorum marginibus obscure rufis, pedibus rufo testaceis; antennis minus incrassatis, articulis 5-10 brevioribus; thorace breviore, magis transverso, densius fortiusque vix rugosule, elytris subtilius minus rugose, abdomine vix densius punctatis; thorace basi magis marginato; elytris brevioribus et angustioribus, thorace non latioribus, quarta parte brevioribus, maxime transversis; abdomine magis acuminato. Long. 4½-5½mm. (*Fvl.*)

Cape York, Somerset, North Australia.

75. ALEOCHARA CROCEIPENNIS.

Aleochara croceipennis, Mots. Bull. Mosc. XXXI., p. 238 (1858); Fauvel, Ann. Mus. Genov. X., p. 292 (1877)—*Aleochara sanguinipennis,* Kraatz, Wiegm. Archiv. XXV., p. 17 (1859)—*Aleochara maculipennis,* Kraatz, *l.c.*

Statura et magnitudine *rufipennis,* Er., sed fere latior, nigra, nitida, antennarum articulis 4 primis, pedibus elytrisque rufis, his macula laterali majuscula nigra; antennis breviusculis, crassis, articulis 5-10 fortiter transversis, 11.° magno, acuminato; capite thoraceque fere ut in *rufipenni,* sed angustioribus, punctura utriusque parca, illius obsoleta, hujus distincta; thoracis dorso punctis 4 majoribus quadratim positis; scutello punctato; elytris thorace parum brevioribus, confertim minus profunde punctatis; abdomine leviter acuminato, segmentis fortiter, apicem versus minus crebre punctatis. Long. 3½ mm. (*Fvl.*)

Gayndah, Queensland; also recorded from India, Ceylon and the Celebes.

The colour of this species is stated to be variable; in some specimens the lateral marking on the elytra is wanting.

76. ALEOCHARA VICINA, sp. n.

Elongate, rather narrow, slightly convex, reddish testaceous, finely and sparingly clothed with grey pubescence; head piceous; elytra pale testaceous, with a moderately large dusky spot about the scutellum; 5th and 6th abdominal segments dusky at the base; antennæ and legs pale testaceous.

Head very finely and closely punctured. Antennæ with the second joint shorter than the third. Prothorax transverse, narrowed in front, very finely and closely punctured, the pubescence moderately close, all the angles rounded. Scutellum very small. Elytra about as long as the prothorax, rather finely and very closely punctured, the pubescence fine and close. Abdomen slightly narrowed posteriorly, finely and moderately closely punctured, the pubescence rather long. Length 3 mm.

King George's Sound, West Australia.

Allied to *Aleochara croceipennis.*

77. ALEOCHARA PUBERULA.

Aleochara puberula, Klug, Col. Madag. p. 51 (1883); Kraatz Wiegm. Archiv. XXV., p. 16 (1859.)—*Aleochara decorata*, Aubé, Ann. Soc. Ent. Fr. (2) XIX., p. 311 (1850.)—*Aleochara Armitagei*, Wollaston, Ins. Mad., p. 559 (1854.)—*Aleochara dubia*, Fauvel, Ann. Soc. Ent. Fr. (4) III., p. 429 (1863.)

Nigra, fusco-pubescens, antennis basi apiceque, thoracis limbo tenui, elytrorum vitta obliqua pedibusque rufis, abdomine confertim fortius punctato, segmento septimo supero subtruncato. Long. 1½-1¾ lin.

Antennae paulo graciliores, art. 3 primis rufo-testaceis, 5-10 longitudine vix latioribus, ultimo *apice testaceo.* Capitis thoracisque forma fere eadem quae in *Al. asiatica*, pubescentia autem subtilior. Elytra thorace *parum* breviora, confertim fortius punctata, rufa, macula triangulari communi circa scutellum et altera laterali nigris. Abdomen *confertim* fortius punctatum, nigrum, nitidum, segmentorum marginibus rufo-piceis. Pedes testacei. Abdominis segmentum septimum superum *maris* vix, *feminae* leviter emarginatum. (*Kr.*)

Gayndah, Queensland; Paroo River, Sydney, New South Wales; South Australia.

A cosmopolitan and somewhat variable species.

78. ALEOCHARA SEMIRUBRA.

Aleochara semirubra, Fauvel, Ann. Mus. Genov. X., p. 293 (1877).

Forma *tenuicornis*, sed minor, nigra, opaca, capite abdomineque nitidulis, corpore antice dense subtiliter fusco-pubescens, antennarum articulo 1.°, palpis, elytris totis pedibusque cum coxis et pectore rufis; ano piceo; antennis tenuibus, articulis 7-10 non longioribus quam latioribus, 11.° elongato, acuminato, apice dilutiore; capite subtilissime parcius, thorace creberrime, subtilissime, elytris paulo fortius densissime, abdomine crebre fortiter punctatis; thorace convexo, transverso, antice arcuatim fortiter angustato, angulis posticis obtusis; elytris thorace sat latioribus, paulo longioribus, planiusculis; abdomine parum attenuato. Long. 3⅝ mm. (*Fvl.*)

Gayndah, Queensland.

17. CORREA. (1)

Fauvel, Ann. Mus. Genov. XIII., p. 592 (1878).

Genus *Aleocharae* vicinum. Corpus parallelum. Caput multo majus, magis proeminens. Mandibulae robustae, exsertae. Oculi

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(1) The name *Fauvelia* has been proposed for this genus by Prof. R. Tate and adopted by Mr. S. E. Holder (Trans. Royal Soc. S. A. IV., p. 95) on the ground that *Correa* is preoccupied in botany. As such a change is without precedent and is contrary to the Strickland Rules of Nomenclature I have retained the orginal appellation.

minuti. Palpi maxillares articulo minuto addito (5.°) bene distincto. Tibiae anticae et intermediae fortiter spinosae. Tarsi breves, 5-articulati, posticorum articulo 1.° circiter 2! longitudine, 5.° tribus praecedentibus simul sumptis aequali. (*Fvl.*)

This genus is allied to *Aleochara* which it resembles in having the maxillary palpi 5-jointed, but is sufficiently distinguished by the form of the posterior tarsi, the first joint in *Aleochara* being one half longer than the second.

79. CORREA OXYTELINA.

Correa oxytelina, Fauvel, Ann. Mus. Genov. XIII., p. 592 (1878).

Magnitudine satis *Aleocharae nitidae*, multo longior et angustior, facie quasi *Oxyteli insecati*, parallela, nitidissima, parce breviter fusco pubescens, nigra, palpis, antennarum articulis 3 primis, elytris, praeter summam basim vix et latera infuscata, pedibusque laete rufis; antennis parum incrassatis, sat brevibus, articulo 4.° vix, sequentibus sat fortiter transversis, 11.° ovato; capite thoraceque insignibus, utroque elytris in ♂ latiore, illo maximo, suborbiculato, convexo, hoc transverso, subsemicirculari, antice recte truncato, angulis anticis acutis, lateribus parallelis, basi cum angulis posticis rotundato; capite caeterum utrinque parce sat fortiter, post oculos subasperatim punctato; thorace vage vix perspicue punctato, in ♀ longiore, antice parum angustato; elytris parvis, parum convexis, thorace subbrevioribus, transversis, parce parum fortiter, abdomine praeter segmentorum basim subtiliter parum dense subasperatim, 6.° parcius, punctatis; ♂ segmento 7.° supra medio apice subtiliter emarginato, spinulis numerosis, brevibus, tenuissimis quasi ciliato. Long. 4-4½ mm. (*Fvl.*)

Adelaide, South Australia.

18. OLIGOTA.

Mannerheim, Brachél, p. 72 (1830); Lacordaire, Gen. Col. II., p. 39.

Mentum transverse, narrowed and feebly emarginate in front. Ligula very small, bifid. No visible paraglossæ. Maxillary palpi with the 2nd and 3rd joints sub-equal, rather swollen. Labial palpi 3-jointed, the first two joints large, equal, the 3rd very small, subulate. Maxillæ like those of *Homalota*. Mandibles bifid at the apex. Head much narrower than the prothorax, not constricted behind. Antennæ inserted before eyes, short, 10-jointed, 1st and 2nd longer and larger than the others, 3-10 very small, the last three or four forming a gradual oblong club. Prothorax short, wider than the elytra, slightly bisinuate at the base. Elytra strongly and conjointly emarginate behind. Abdomen parallel-sided or gradually narrowed behind. Legs short; intermediate coxæ remote; tarsi 4:4:4, the posterior pair with the 1st joint slightly elongate.

This genus will be readily recognised by the structure of the antennæ and tarsi. The species are occasionally found in ants' nests, but are more frequently met with under bark or in decaying vegetable substances.

80. OLIGOTA ASPERIVENTRIS.

Oligota asperiventris, Fauvel, Ann. Mus. Genov. XIII., p. 573 (1878.)

O. apiciventri vicina, sed minor et dimidio angustior, abdomine asperatim punctato ; colore et facie *parvae* propior, sed angustior, antennarum articulo 7.° minus brevi, punctura corporis antici magis nitidi duplo parciore, abdominis parciore et praesertim multo fortiore, pube omni longiore et parciore, capite thoraceque rufulis, elytris abdomineque rufo-piceis, hoc segmento sexto piceo, margine postico cum 7.° 8.°que rufo-flavo. Long. 1 mm. (*Fvl.*)

Melbourne, Victoria.

Tribe 2. GYROPHAENINA.

Maxillæ with the outer margin of the inner lobe corneous, the inner margin membranous and ciliate, rounded at the apex; maxillary palpi with the third joint rather strongly thickened, the fourth only a little shorter, subulate. Labial palpi 2 or 3-jointed. Eyes large, prominent.

19. GYROPHAENA.

Mannerheim, Brachél. p. 74 (1830); Lacordaire, Gen. Col. II., p. 43.

Mentum rather short, slightly emarginate in front. Ligula short, rounded, entire. No visible paraglossæ. Maxillary palpi rather short, the 2nd and 3rd joints sub-equal, the former much broader than the latter. Labial palpi 2-jointed, the 1st cylindrical, the 2nd a little shorter, slender and acuminate. Maxillæ with the internal lobe rounded at the extremity, and armed with many small closely-placed spines, the inner side membranous. Mandibles unarmed, hidden by the labrum, which is transverse and truncate in front. Head narrower than the prothorax. Eyes rather large. Antennæ variable in length, joints 1-3 slightly elongate, sub-equal, 4-11 gradually increasing in size. Prothorax a little narrower than the elytra, broadly transverse, margined, rounded at the base. Elytra considerably longer than the prothorax, truncate behind. Abdomen broad, oblong. Legs rather short; the intermediate coxæ somewhat distant; tarsi 4:4:5, the 1st joint of the posterior pair elongate.

81. GYROPHAENA CRIBROSA.

Gyrophaena cribrosa, Fauvel, Ann. Mus. Genov. XIII., p. 569 (1878).

Magnitudine, facie et colore *Poweri*, sed omnino distincta; testacea, nitida, capite, elytris circa apicem abdominisque cingulo angusto infuscatis; antennis praeter basim vix fuscis, articulis 2-3 minimis, 3.° fortissime transverso, sequentibus magnis, latitudine aequalibus, 5-10 longitudine parum decrescentibus, 9.° quadrato, 10.° vix transverso, 11.° acuminato; capite vix cupreo, post antennarum basim utrinque impresso ibique parce fortiter punctato, oculis sat parvis; thorace capite paulo latiore, maxime transverso, ab apice ad basim parum angustato, angulis posticis fere rotundatis, basi tenuiter marginata, impunctata, caeterum disco fortiter parce, utrinque adhuc parcius punctato, punctis 4 majoribus subquadratim medio positis, 5.° utrinque extus ante medium; elytris

fortiter transversis, thorace paulo longioribus et multo latioribus, fortiter sat dense, vix circa scutellum minus, punctatis; abdominis segmentis 2-5 parum dense sat subtiliter punctatis, 6.° vix alutaceo; ♂ segmento 6.° supra apice patellatim anguste truncato, patella extus parum profunde excisa, spina elongata, acuta, extus incisuram protensa. Long. 2 mm. (*Fvl.*)

Sydney, New South Wales.

20. BRACHIDA.

Mulsant and Rey, Brév., p. 4, pl. 2, fig. 14-18 (1871).

I have not been able to obtain access to the description of this genus. Its three-jointed labial palpi appear to distinguish it from *Gyrophaena.*

82. BRACHIDA SUTURALIS.

Brachida suturalis, Fauvel, Ann. Mus. Genov. XIII., p. 570 (1878).

Brevis, crassa, latiuscula, sat nitida, sat dense subtiliter flavo pubescens, abdomine parce piloso, tota rufo testacea, capite segmentorumque 5-6 cingulo infuscatis; antennis brevibus, tenuibus, circa apicem vix incrassatis, articulo 1.° crassiore, 2.° 3.°que angustioribus, aequalibus, elongatis, 4.° brevi, transverso, 5-10 latioribus, brevissimis; capite parum dense subtilissime, thorace paulo densius fortiusque, elytris sat fortiter nec densius, vix squamoso, punctatis; capite magno, transverso, subconvexo, oculis magnis; thorace basi duplo latiore quam longiore, a basi ad apicem arcuatim sat fortiter angustato, basi utrinque sinuato, convexo, aequali, angulis anticis rotundatis, posticis obtusis; elytris thorace paulo longioribus, vix latioribus, sat convexis, apice medio et utrinque circa angulos sinuatis; abdomine lato, brevi, subparallelo, elytris parum angustiore, segmentis 2-3 crebrius subtilius, 4-6 parce fortius punctatis, 6.° apice late flavo; ♂ elytris circa scutellum vix torulosis, sutura media 4 vel 5 catenulatim crenosa, segmento 6.° medio denticulo longitudinaliter parum elevato instructo. Long. 2⅓ mm. (*Fvl.*)

♀ latet.

Adelaide, South Australia.

83. BRACHIDA ATRICEPS.

Brachida atriceps, Fauvel, Ann. Mus. Genov. XIII., p. 571 (1878).

Convexa, crassula, subparallela, nitida, praecedente minor et angustior, antennis robustis, obscure testacea, capite nigro-piceo, thorace rufulo, abdominis segmentis 4-5 obscure piceolis, 6.° fere toto rufo testaceo; parce flavo pubescens; antennis parum pilosis, incrassatis, articulis 4-10 sensim magis transversis, 11.° crasso, tribus praecedentibus subaequali; capite thoraceque sublaevibus, hoc ante basim transversim subtiliter quasi seriatim punctato, brevissimo, transversim ovali, capite tertia parte latiore, basi utrinque profunde sinuato, lateribus angulisque fortiter rotundatis; elytris thorace vix latioribus, paulo longioribus, fortiter sat dense, abdominis vix attenuati segmentis basi subtiliter dense punctatis. Long. 2 mm. (*Fvl.*)

Victoria.

84. BRACHIDA BASIVENTRIS.

Brachida basiventris, Fauvel, Ann. Mus. Genov. XIII., p. 571 (1878.)

Facie satis *crassiusculae* Kr., oblonga, convexa, rufa, nitida, longe parum dense fulvo pilosa, antennarum articulis 5-11 piceis, capite, elytris apice a medio extus ad suturae apicem segmentisque 6-8 nigris; antennis pilosulis, articulis 7-10 sat transversis, 11.° piceo, oblongo, acuto; capite disco utrinque parum dense sat fortiter, thorace sat crebre subtilissime, elytris praesertimque abdomine sat dense subasperatim punctatis, segmento 7.° laeviore; thorace duplo latiore quam longiore, brevissimo, a medio antice posticeque fortiter angustato, postice fortiter rotundato, basi anguste marginata, punctis 2 majoribus disco ante apicem, aliisque 2 ante basin approximatis; elytris transversis, thorace vix longioribus et latioribus, secundum suturam angustissime impressis; abdomine parum attenuato, segmentis 2-4 basi transversim profundius impressis. Long. 2¼ mm. (*Fvl.*)

Sydney, New South Wales.

85. BRACHIDA ANNULATA.

Brachida annulata, Fauvel, Ann. Mus. Genov. XIII., p. 572 (1878.)

A praecedente statura paulo minore, colore rufo testaceo, abdomine sat fortiter attenuato, pube multo densiore et subtiliore, capite utrinque disco crebrius, thorace densius fortiusque, elytris abdomineque triplo crebrius subtiliusque punctatis, elytris praeter latera, segmentisque 4-5 tantum nigricantibus; thorace angustiore, minus transverso, punctis 4 majoribus disci non perspicuis, basi utrinque sinuata; elytris paulo longioribus, sutura haud impressa; segmentis basalibus minus transversim impressis, 6.° subtiliter sat dense punctulato. Long. 2 mm. (*Fvl.*)

Sydney, New South Wales.

Tribe 3. GYMNUSINA.

Maxillæ with the inner lobe entirely corneous, serrate on the inner side, the apex hooked; maxillary palpi with the second and third joints very long, the fourth extremely small and not very distinct. Eyes scarcely prominent.

21. MYLLAENA.

Erichson, Käf. Mark, I., p. 382 (1837); Lacordaire, Gen. Col. II., p. 48.—*Centroglossa*, Matthews, Ent. Mag. V., p. 194 (1838).

Mentum transverse, slightly emarginate, the anterior angles enormously produced. Ligula very small, rounded, entire. Maxillary palpi 3-jointed, the 1st joint minute, 2nd and 3rd increasing in width. Labial palpi 2-jointed, 1st joint elongate. Maxillæ with the external lobe slender, ciliate internally near the apex; the internal lobe long, hooked at the apex, the inner side finely denticulated from the middle. Labium membranous, furnished with two long filaments. Mandibles robust, unarmed, provided on the inner side with a large denticulated membranous plate. Head somewhat produced in the middle. Antennæ slender, 1st joint robust, 2nd twice as long as the 3rd. Prothorax transverse. Elytra somewhat emarginate behind near the external angles. Abdomen strongly narrowed posteriorly. Legs rather long, not spined; tarsi 4:4:5, posterior pair with the 1st joint elongate.

86. MYLLAENA INTERMEDIA.

Myllaena intermedia, Erichson, Käf. Mark, I., p. 383 (1837); Matthews, Cist. Ent. III., p. 37 *bis* (1883).

Fuscous black, clothed with a very short fuscous pubescence, closely and finely tuberculate; head much attenuated in front, mouth yellow; thorax slightly dilated at the base; elytra scarcely wider than the thorax; abdomen scarcely as long as the anterior parts of the body, conic, acutely attenuated towards the apex, apical segment and posterior half of the penultimate pale, edge of the penultimate segment white; legs and antennæ pitchy testaceous. Length 2 mm. (*Matth.*)

Victoria; also found in Europe.

22. DINOPSIS.

Matthews, Ent. Mag. V., p. 193 (1838); Kraatz, Linn. Ent. XI., p. 37 (1857).

Mentum large, transverse, broadest at the base. Ligula cleft, lobes nearly as large as the palpi. Maxillary palpi 3-jointed, basal joint minute, the two others long, the terminal one being clavate. Labial palpi 3-jointed, 1st joint large, last joint very small, acuminate. Maxillæ with the inner lobe slender, acute at the tip and armed above the middle with sharp teeth; the other lobe slender, ciliate at the extremity. Mandibles with three strong teeth on the inner side above the middle, membranous and denticulate internally. Head produced in front. Antennæ with the 2nd and 3rd joints elongate. Prothorax and elytra transverse. Legs rather short; tarsi 3:3:3, the first two joints rather short, the 3rd as long as the 1st and 2nd together.

87. DINOPSIS AUSTRALIS

Dinopsis australis, Fauvel, Ann. Mus. Genov. XIII., p. 567 (1878.)

D. erosa dimidio minor, paulo minus sericea, pube longiore et parciore; antennis tenuioribus et brevioribus, circa apicem rufulis, articulis omnibus brevioribus; thorace minus transverso, subsemicirculari, antice arcuatim praesertim angulis rotundato, angulis posticis paulo acutioribus, fovea basali latiore et profundiore; elytris minus subtiliter punctatis, disco oblique paulo profundius impressis; abdomine magis attenuato, pube ferruginea, segmento 6.° dimidia parte apicali 7.°que rufotestaceis; pedibus brunneis; ♂ segmento 7.° apice supra sat profunde triangulariter inciso, subtus vix longiore, rotundato. Long. 2 mm. (*Fvl.*)

Victoria.

EXPLANATION OF PLATE VII.

Fig. 1.—*Apphiana veris;* a, antenna; b, mandible; c, maxilla and maxillary palpus; d, labium and labial palpi.

Fig. 2.—*Dabra myrmecophila;* a, maxilla and maxillary palpus; b, labium and labial palpi.

(NOTES FROM THE AUSTRALIAN MUSEUM.)

DESCRIPTIONS OF TWO NEW FISHES.

By E. P. Ramsay, L.L.D., F.R.S.E., and J. Douglas-Ogilby.

Myripristis carneus. sp. nov.

B. vii. : D. 12/15 : A. 4/11 : V. 1/7 : P. 16 : C. 19 : L. lat. 36 : L. trans. 4/9.

Length of head $2\frac{9}{10}$, of caudal fin $5\frac{2}{5}$, height of body $2\frac{4}{5}$ in the total length. Diameter of eye $3\frac{4}{5}$ in the length of head, equal to that of the snout, and $\frac{5}{8}$ of a diameter apart; interorbital space $\frac{1}{6}$ of the length of head. Posterior edge of hind nostril serrated. Upper jaw rather overlapping the lower; chin with a very slight prominence. Maxilla with a few small blunt denticulations in front; it reaches to behind the orbit. Upper surface of head and orbital ring furnished with smooth furrows, in which are placed a moderate number of circular pores. Turbinals, pre- and sub-orbitals, all the opercular bones, the bases of the four anterior branchiostegals and the post-temporal bone serrated; a moderately prominent spine at the upper opercular angle. Jaws, vomer, and palatines with numerous small rounded molariform teeth. Fourth dorsal spine the longest, rather more than $\frac{1}{3}$ of the length of head, and but little shorter than the rays; fourth anal spine the longest, but not so strong as the third; ventrals shorter than the pectorals, which are $\frac{3}{5}$ of the length of head; caudal forked, the lobes rounded. *Colors*; uniform red.

The type specimen measures $5\frac{1}{4}$ inches, and has been presented to the Australian Museum by Capt. Farrell, who obtained it at the Admiralty Islands; its register number is I. 214.

SYNGNATHUS PARVICEPS. sp. nov.

D. 29 : P. 14 : C. 7 : Oss. rings, 15/42.

Length of head $12\frac{1}{5}$, of body including head $3\frac{1}{7}$ in the total length. Diameter of eye $\frac{1}{2}$ of the post-orbital portion of the head, which is longer than the snout; interorbital space concave, equal to the diameter of the eye. Supraorbital ridges high, extending back along the sides of the occiput; a sharp bony occipital ridge, extending to the middle of the first body ring. Opercle with a median ridge from whence radiate striæ. The dorsal fin commences on the first, and extends over seven caudal rings. The egg-pouch is rather more than half the length of the tail. Mandibular spine prominent, equal in length to the orbit. *Colors*, brown, fins and abdomen paler.

The type specimen measures $4\frac{1}{4}$ inches, and was sent from the Clarence River by Mr. T. Temperley, Inspector of Fisheries. Its register number is I. 191.

NOTES AND EXHIBITS.

The Hon. James Norton exhibited a number of fossils (Chaetetes and Spirifers) from Black Head, a few miles south of Kiama. Also, specimens of a porphyritic rock from Coolangatta, Shoalhaven, with large crystals present in some, and decomposed by weathering in others.

Mr. Whitelegge exhibited specimens of a large species of *Nitella* with the following explanatory note.

"A short time ago I found in the Parramatta River a very remarkable member of the above genus. It is an erect growing plant between 3 and 4 feet in height, mostly branching near the base, and giving off some five or six whorls of simple leaves, each leaf consisting usually of three cells, sometimes of only two. The stem and leaves (six in number) are usually about $\frac{1}{16}$ of an inch in diameter. The internodal cells of the stem are usually 4 or 5 inches, but sometimes much longer. I have measured some of the largest yet found, and they are from 7 to 8½ inches in length. It is highly probable that the cells of this plant are larger than those of any hitherto recorded. There are several other features which may not have been noticed in the genus. For instance, the leaves can be readily disarticulated from the stems without any apparent injury to either. When a cell is ruptured the sound produced is not unlike that of the bursting of the air-bladders of seaweeds.

The rotation exhibited in the inner nodal cells differs from that of the stem and leaves, inasmuch as the chlorophyll granules take part in the general rotation. The protoplasm in the young leaves when viewed under the microscope with the edge of the cell in focus, appears as a series of elevations and depressions, and with the higher part of the cell in focus, these elevations appear as clear spaces surrounded by small granules. Within the layer of protoplasm there exist large numbers of spherical clusters of needle-like crystals, which circulate along the line of demarcation between the cell-sap and the protoplasm."

Mr. Brazier exhibited photographs of four species of *Partula* from the collection of Dr. Hartman, of Westchester, U.S.—*Partula Magdelinæ* and *bellula* from the Marquesas Islands, *flexuosa* from the Solomon Islands, and *Tryoni* from Tutuila, Samoan Islands. For this last species Mr. Brazier explained that Dr. Hartman had given a wrong locality (Solomon Islands) on the authority of Mr. Andrew Garrett, the correct one being, as above stated, the Samoan Islands.

Mr. Meyrick exhibited the New Guinea Lepidoptera mentioned in his Paper.

Mr. Macleay exhibited thirty-seven species of *Diphucephala* out of a total of forty-two species recorded in his Paper on the genus.

Mr. Fletcher exhibited two stages of the segmenting ova of *Pseudophryne Bibronii*, and tadpoles of the same species, still enclosed in their gelatinous envelopes, but ready to hatch on gaining access to water.

The President exhibited a specimen of a Boletus (*B. bovinus*) very abundant in the University paddocks at present, and regarded as a valuable esculent. Dr. Badham in his work upon the edible Fungi, speaks of many species of Boletus as excellent in flavour and perfectly wholesome. This species has been frequently used, and much liked—though its appearance is not very attractive.

Mr. Masters exhibited a fine collection of Land Shells from Cairns, Queensland, among which were large specimens of *Helix bipartita*, *H. Macgillivrayi*, *H. Franklandiensis*, and *Vitrina Brazieri*.

WEDNESDAY, 26TH MAY, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

Mr. Hugh Pollock, B.A. (Dublin), was present as a visitor.

MEMBERS ELECTED.

Mr. Thomas Steel, Nausori Mill, Rewa River, Fiji; Capt. John Strachan, Sydney.

DONATIONS.

"Twenty-Second Annual Report of the Zoological and Acclimatisation Society of Victoria (for the year 1885)." From the Society.

"Nouvelles Archives du Muséum d'Histoire naturelle, Paris." Deuxième Série. Tomes VII. and VIII. 1885; "Notes from the Leyden Museum," edited by Dr. F. A. Jentink, Director of the Museum. Vol. VII. Nos. 2, 3, 4; Vol. VIII. No. I, April 1885, Jan. 1886; "Curtis's Botanical Magazine." Vol. XLI. 3rd. Series, 1885; "Report of the Scientific Results of the Exploring

Voyage of H.M.S. Challenger." 1873-76. Zoology, Vols. XII. and XIII. Botany, Vol. I. "Narrative of the Cruise with a general account of the Scientific Results of the Expedition." Vol. I. Second Part; "Encyclopædia Britannica." Vol. XIX. 1885. From the Hon. William Macleay, F.L.S.

"Proceedings of the Cambridge Philosophical Society." Vol. V., Part 5, 1885. From the Society.

"Catalogue of the Australian Stalk- and Sessile-eyed Crustacea." By William A. Haswell, M.A., B.Sc. From Dr. E. P. Ramsay, F.R.S.E., &c.

"The Chemist and Druggist of Australasia." Vol. I. No. 5, May, 1886. From the Publisher.

"Journal of Conchology." Vol. V. No. 1, Jan. 1886. From the Conchological Society of Great Britain and Ireland.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CII. Nos. 6-11, 1886. From the Academy.

"Zoologischer Anzeiger." IX. Jahrg., Nos. 219 and 220, 1886. From the Editor.

"Journal of the New York Microscopical Society." Vol. I., No. 9, 1885. Vol. II., No. 1, 1886. From the Society.

"Studies from the Biological Laboratory of the Johns Hopkins University," Baltimore. Vol. III., No. 5, 1886; "University Circulars." Vol. V., No. 47, 1886. From the University.

"Annual Report of the Trustees of the American Museum of Natural History, New York." 1884-5. From the Trustees.

"Abstract of Proceedings of the Royal Society of Tasmania." April 13th, 1886. From the Society.

"Monatliche Mittheilungen der Naturwiss. Vereins des Regierungsbezirkes Frankfurt." III. Jahrg., Nos. 11 and 12; IV. Jahrg., No 1.

"Five Botanical Leaflets." By Baron Ferd. von Mueller, K.C.M.G., &c. From the Author.

"The Works of Francis Maitland Balfour." Memorial Edition, in four volumes. From the relations of the late Professor F. M. Balfour.

"Natuurkundig Tijdschrift voor Nederlandsch-Indië." Deel XLV., 1886. From the Kon. Natuurk. Vereeniging in Ned.-Indië.

NOTES ON SOME AUSTRALIAN TERTIARY FOSSILS.

BY CAPTAIN F. W. HUTTON,

HON. MEM. LIN. SOC. OF N. S. WALES.

Last year Professor R. Tate sent a very fine collection of Tertiary Australian fossils to the Canterbury Museum. After an examination of them I beg to offer the following notes which may be found useful:—

ANCILLARIA HEBERA, Hutton.

Quite similar to New Zealand specimens.

NASSA TATEI, Tenison-Woods.

This is the same as *Nassa compta*, Hutton (not of Adams), afterwards *N. socialis*, Hutton. Woods' name will stand.

MARGINELLA HORDEACEA, Tate.

This is, I think, the same as the Awamoa fossil that I considered to be *M. australis*, Hinds.

TEREBRA CALENIFERA, Tate.

The same as *Cerithium bicorona*, Hutton. Prof. Tate's name has priority.

SURCULA ATRACTOIDES, Tate.

I think this is the same as my *Pleurotoma Haasti.*

TRITON PSEUDOSPENGLERI, Tate.

Is the same as *T. minimus*, Hutton. I think Prof. Tate's name should stand as mine is not distinctive.

TORCULA MURRYANA, Tate.

Very like small specimens of *Turritella concava,* Hutton.

ENTALIS TEXTURATUS, Tate.

The same as *Dentalium Mantelli,* Zittel.

LIMA BASSII, Tenison-Woods.

The same as *L. colorata,* Hutton. Mr. Woods' name should stand as mine is incorrect.

PECTEN INCERTUS, Tenison-Woods.

The same as *Pecten Burnetti,* Zittel.

PECTEN YAHLENSIS, Tenison-Woods.

The same as *P. Hectori,* Hutton. Mr. Woods' name has priority.

PECTEN ALDIGENSIS, Tate.

The same as *P. Williamsoni,* Zittel.

GRYPHÆA TARDA, Hutton

Agrees with New Zealand specimens.

TEREBRATULINA SCOULERI, Tate.

The same as *T. Suessi,* Hutton.

LEIOCIDARIS AUSTRALIÆ, Duncan.

The same as *Cidaris striatus,* Hutton. Dr. Duncan's name has priority.

ECHINUS WOODSII, Laube.

The same as *E. Enysi,* Hutton. Laube's name has priority.

PERICOSMUS COMPRESSUS, McCoy.

The same as *Meoma Crawfordi,* Hutton. Professor McCoy's name should be retained as the figure of my species has not yet been published.

ON SOME FURTHER EVIDENCES OF GLACIATION IN THE AUSTRALIAN ALPS.

BY JAMES STIRLING, F.G.S., F.L.S.
COR. MEM. ROY. SOC., S. AUSTRALIA.

(Communicated by C. S. Wilkinson, F.G.S.)

Since my announcement of the discovery of glacier evidences in the Mitta Mitta Valley (1), and Dr. von Lendenfeld's subsequent discovery of traces of ancient glaciers on Mt. Kosciusco (2), an interesting controversy has arisen respecting the nature and extent of such glaciation. Having recently undertaken an exploration of Mt. Bogong, the highest mountain in Victoria, in company with Dr. von Lendenfeld, for the purpose of discovering further glacier evidences, and so aiding a solution of this important question, I have much pleasure in submitting the following remarks on the results of that expedition. It may be of interest to review my connection with the controversy as a student of Physiography resident in the central part of the Australian Alps. During 1880-83, when studying the *flora* of the Australian Alps and collecting herbarium specimens for our venerable Nestor of Botanic Science, Baron von Mueller, it appeared to me that the date of the introduction of the endemic *florula* of the Australian Alps (whose affinities were so closely Tasmanian) might safely be centred in glacial movements since Miocene times, (3) provided geological evidences, which would lend support to the hypothesis, could be obtained for, as remarked by the ex-President of the Linnean Society, Mr. Wilkinson, F.G.S., F.L.S., in one of his admirable addresses to the Society (4), the existence of a semi-tropic flora in South East Australia during Pliocene times and its subsequent banishment from this region is evidence of a great change of climate in Post-Pliocene times.

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(1) *J. Stirling.* On the Meteorology of the Australian Alps. Trans. Roy. Soc. Vict., 1884, p. 23.

(2) *R. von Lendenfeld.* On the Glacial Period in Australia. Proc. Linn. Soc. N.S.W., 1885, p. 45.

(3) *J. Stirling.* Remarks on Flora of Australian Alps. Southern Science Record, 1885, p. 93.

(4) *C. S. Wilkinson.* President's Address, Linn. Soc. N.S.W., Vol. IX., p. 1236.

In a paper which I have in preparation on the geographic range of the flora of the Australian Alps, it will be shown that many species found three between 2,000 and 5,000 feet, have a wide range, recent researches on the flora of Marroca in Africa, and on that of Rurum Valley, Afghanistan, having disclosed the presence of numerous species of plants common to the Australian Alps; and as Sir Joseph Hooker remarked many years since in his splendid Essay on the Flora of Australia, "if as complete evidence of "such a proportionately cooled state of the intertropical regions "were forthcoming as there is of a glacial condition of the "temperate zones, it would amply suffice to account for the "presence of European and Arctic species in the Antarctic and "south temperate regions of both hemispheres on the mountains "of intermediate tropical latitudes." (1)

As early as 1882 I discovered many examples of what appeared to be glaciated surfaces in the higher regions of the Australian Alps, notwithstanding that in some areas there were strong evidences of powerful sub-aerial denudation and erosion having taken place during Pleistocene times. *En passant*, I may mention that these apparently glaciated surfaces were seen on the quartz porphyries of Mt. Cobboras at elevations between 4,000 and 6,000 feet; on the metamorphic rocks of Mt. Pilot on the Pilot River Valley, down to 3,000 feet; and on the granitic rocks of Mt. Kosciusco, recently photographed by Dr. von Lendenfeld. Partly, however, from inexperience of glaciated surfaces elsewhere, I hesitated to pronounce authoritatively on them as glacier evidences until further opportunities were afforded me of discovering moraines, and erratics at the lower levels. From the fact that my friend A. W. Howitt, F.G.S., had not observed any appearances which he could in any way refer to a glacial period analogous with that of the northern hemisphere unless (as he further remarks) the old lake basins near Omeo might suggest the action of ice, (1) I thought it very probable that any pre-existing evidences at the lower levels might have been scoured away by a subsequent pluviatile period (2.)

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(1) *J. D. Hooker.* Flora of Australia.

The publication by my friend, Mr. G. S. Griffith, of a paper on evidences of a glacial epoch in Victoria during Post-Miocene times (3), induced me to re-examine the evidences at the higher altitudes, and to endeavour to follow the traces to lower levels in the Indi and Mitta Mitta Valleys, with the result that I felt justified in making the announcement previously referred to on 11th December, 1884, even though some of the phenomena therein ascribed to glacier action might be found on closer scrutiny to have been produced by other causes. The indications taken as a whole were sufficient in my opinion to justify the hypothesis of glaciation, for on no other conceivable theory, as it appeared to me, could the facts as a whole be accounted for, while refrigeration of the area and the consequent production of glaciers in the valleys of the Australian Alps over wide areas would harmonise with conclusions deducible from an examination of the flora and fauna. In the beginning of January 1885, Dr. von Lendenfeld ascended Mt. Kosciusco and photographed some glaciated surfaces. From the absence of any reference to my previous announcements save a mere reference from "Southern Science Record," to the snow patches at the higher regions of the Australian Alps, I inferred that Dr. von Lendenfeld was unaware of my previous writings and discoveries, or he would not have stated in his interesting paper on the glacial period in Australia, read before the Linn. Soc. of N.S.W. during January 1885, that the glacial area was limited to 100 square miles above 5,800 feet altitude. (4) On 9th July I published in the Trans. Roy. Soc. Victoria, the first of an intended series of papers on the evidences of glaciation in the Australian Alps, detailing certain phenomena in the Livingstone Creek and Victoria River Valleys. (1) During the same month a paper by Captain, now Professor Hutton, F.G.S. of New Zealand, was read before the Linnean Society of N.S.W., on the supposed glacial epoch in Australia (2), being in part a reply to Dr. von Lendenfeld's previous writings concerning a very recent glacier epoch in the Southern Hemisphere, based upon New Zealand experiences and explorations, and partly an endeavour to show that the *roches moutonnées* and smoothed surfaces on Mt. Kosciusco by no means imply, or to use the actual words of the learned Professor, "it " by no means follows that they were caused by a glacial epoch, " because they might equally well be due to greater elevation, "combined with greater atmospheric moisture." We are also advised to " distrust an attempt to explain an *isolated phenomenon* by means of a wide-spread cause." Now it appears to me that Captain Hutton would not have assumed the isolation of the phenomena if he had been fully acquainted with the literature of the subject, and especially my announcement previously referred to. I do not propose to join issue with him in respect to the distinction he seeks to draw between a "glacier epoch" and a "glacial epoch," but merely to show that the phenomena of glaciation are not so isolated as his remarks would lead one to suppose he believes them to be. I am led to make these remarks, because as a student of Physiography I feel very much indebted to Prof. Hutton for the valuable information supplied by his writings concerning the geological structure, flora, fauna, and climatology of New Zealand, and I should be sorry to know that he laboured under any misapprehension as to the nature and extent of the evidences of glaciation in the Australian Alps. Following the publication of the papers of myself and Prof. Hutton we have one by Prof. Tate, F.G.S., of South Australia, (3) read before the Royal Society of that colony, in which are stated very clearly the evidences in favour of a glacial period in South Australia. The objections by Mr. Scoullar, Cor. Mem., as to the origin of the glaciated surfaces near Adelaide, viz., that they were caused "by the attrition of blown sand," are also controverted. I have seen some photographs of these glaciated surfaces, (sent to me for inspection by Prof. Tate) and they resemble very strongly the glaciated surfaces on Mts. Cobboras and Bogong, to be hereinafter referred to. Dr. von Lendenfeld has also seen some photographs of polished rocks from South Australia, and has no doubt as to the glacier origin of the polishing, (1) although he doubts whether the striae referred to are isochrone with the glacial traces he discovered on Mt. Kosciusco. In consequence of a very interesting correspondence on the subject of glacier evidences between Dr. von Lendenfeld and myself, it was arranged that we should make a joint trip to the highest mountain in Victoria, Mt. Bogong, and if time and circumstances permitted, explore the Bogong High Plains to the south, and proceed thence along the main dividing range towards Mt. Kosciusco, so that his extensive European Alpine experience and my local geological knowledge might be utilized, and the features discussed on the ground. On the 3rd January, 1886, we met at Snowy Creek junction and tributary of the Mitta, and on the following three days made the ascent of Mt. Bogong from the north, an arduous journey but still of great interest. Dr. von Lendenfeld has already described our journey in the publications of the Mining Department of Victoria (Mining Registrar's Returns for Quarter ended March), so that it is unnecessary for me to repeat the narrative. Suffice it to say that the evidences of glaciation discovered by us are—

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(1) *A. W. Howitt, F.G.S.* Geology of North Gippsland. Q.J.G.S. Lond., vol. 35, p. 35.

(2) *J. Stirling, F.L.S.* On a Geol. Sketch Section through the Australian Alps. Trans. Roy. Soc., S.A., 1884.

(3) *G. S. Griffiths.* On Evidences of a Glacial Epoch in Vict. during Post Miocene times. Trans. Roy. Soc. Vict., 1884.

(4) *R. von Lendenfeld, Ph.D.* On the Glacial Period in Australia. Proc. Linn. Soc., N.S.W., 1885.

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(1) *J. Stirling, F.G.S., F.L.S.* On the Evidence of Glaciation in the Australian Alps. Trans. Roy. Soc. Vict., 1885.

(2) *Prof. Hutton, F.G.S.* On the supposed Glacial Epoch in Australia. Proc. Linn. Soc., N.S.W., 1885.

(3) *Prof. Tate, F.G.S.* On Post-Miocene Climate in South Australia. Trans. Roy. Soc. S.A., 1885.

1. Erratics in the Reewa River and Snowy Creek Valleys.
2. *Blocs perches* and smoothed surfaces on Mt. Bogong.
3. Moraines at base of Mt. Bogong, Mountain Creek in Reewa River Valley.

The first named are very abundant in the Pleistocene drifts at Snowy Creek, consisting of huge basaltic boulders, etc., in linear extension for miles, as at Granite Flat—the nearest basaltic outliers being fully 20 miles distant on Bogong High Plains, etc.

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(1) *R. von Lendenfeld.* Note on the Glacial Period in Australia. Proc. Linn. Soc. N.S.W., Vol. X., p. 330.

The second or what I have called *blocs perches* are large, semi-rounded or sub-angular masses of igneous or rather plutonic rock—hornblende porphyrites—occupying the crests of spurs and sidelings in a regular descending series from near the summit of Mt. Bogong 6,508 feet, towards the Reewa Valley, many of them resting upon smoothed surfaces of pegmatite at lower levels. (Mt. Bogong is gnessic.)

The last named are huge masses of angular and sub-angular rocks at the base of Mt. Bogong, pronounced by Dr. von Lendenfeld to be undoubted moraines (at an elevation of 1,000 feet above sea level). I may remark that these masses are too extensive and distant from the steep spurs of Mt. Bogong to be considered as *talus*; besides which they show evidences of translocation.

I do not purpose entering into a description of further evidences discovered by myself in the Mitta Mitta Valley, at Lake Omeo, or Benambia Creek, etc, in the present paper. There will in due course be communicated a second article on the evidences of glaciation in the Australian Alps, together with a reply to later criticisms. I merely desire to show that the evidences discovered on Mt. Kosciusco by Dr. von Lendenfeld are by no means isolated, and that the highest mountain in Victoria, Mt. Bogong, presents features which confirm the evidences of glaciation elsewhere, and that there is no *a priori* impossibility of the area of glaciation being more extensive than has been assumed. In conclusion, I would add that taking into consideration the facts supplied to us by the examination of the ancient flora and fauna of Australia as contained in the writings of Prof. Tate of South Australia and of Mr. Wilkinson, F.G.S., of New South Wales, and the geological evidences of glaciation over widespread areas daily accumulating, it is difficult indeed to resist the conviction that Southern Australia, as well as South America and Southern Africa, and indeed New Zealand, all participated in a period of refrigeration, culminating in an ice-clad region during later Pliocene or Pleistocene times, notwithstanding that many difficulties suggest themselves in endeavouring to work out the problem from mere localized observations.

JOTTINGS FROM THE BIOLOGICAL LABORATORY OF SYDNEY UNIVERSITY.

By William A. Haswell, M.A., B.Sc.,
Lecturer on Zoology and Comparative Anatomy.

7.—Cutting Sections of Delicate Vegetable Structures.

There is a difficulty in obtaining by the means ordinarily recommended, without considerable pains and loss of time, a number of fine sections of such delicate vegetable structures as the prothallium of a fern, fronds of delicate seaweeds, or thin and flexible leaves of land plants; and the following method which I have found of service will recommend itself by its simplicity.

The specimens to be cut, if they have been in alcohol, are placed in water for a few hours, and then for a day in a thick solution of gum arabic; if fresh they may be placed at once in the gum. Small pieces of carrot are placed in the gum for the same length of time. The specimens to be cut and the carrot which is to form the embedding material are now thoroughly saturated with strong gum solution. Slits are made in the pieces of carrot and the thin structures to be cut are inserted in the slits, any interstices being fiilled up with the gum. The blocks of carrot, with the embedded specimens, are then frozen and cut in the usual manner with the Freezing Microtome. When the sections are placed in water there is little difficulty in picking out the sections of the embedded objects from the light-coloured and flocculent sections of the carrot—an operation which is facilitated by agitation of the water, when most of the narrow needle-like sections of the thin objects will find their way to the bottom of the vessel.

8.—"Vocal organs" of the Cicada.

It is a very prevalent idea, and the error is repeated in nearly every manual of Zoology, that the *Cicada's* organ of voice is a wind instrument. That such could not be the case, however, a consideration of the small bulk of the insect and the great volume of air that would be necessary in order to keep up the very loud sound produced would be sufficient to shew.

The structure of the sound-producing organs in this insect and the mode of production of the sound were correctly described by Réaumur. (1) Attention has recently been called to the subject by Mr. C. Lloyd Morgan of University College, Bristol, who, in an article in a recent number of "Nature," gives an account of some researches of his on this subject published some years ago, but apparently overlooked by recent authors of English Zoological text-books.

The sound is really produced by the bending of a stiff thin chitinous membrane strengthened by stronger narrow ribs, which is situated on the dorsal aspect of the first abdominal segment. The membrane is acted on indirectly by a powerful muscle—the largest by far that the insect possesses—which springs from the ventral side of the abdomen, and runs upwards and outwards towards the dorsal surface. This muscle ends abruptly in a transverse horny plate, from the centre of the upper surface of which a tendon passes to become inserted into a part of the frame supporting the membrane.

The loud shrill note emitted by the insect is the result of a quick succession of crackling sounds produced by the movement of the stiff membrane with its horny ribs through the agency of the muscle. Under ordinary circumstances the sounds follow one another with sufficient quickness to produce a continuous note, and this is effected, not by the contraction of the muscle as a whole, but by the successive contraction of individual fasciculi, all of which act on the horny plate, and thus the movements of the muscle on the tendon during the production of the note resemble these of the hammer-board of a piano when a number of the keys are being struck in quick succession. (2)

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(1) See Pagenstecher's "Allgemeine Zoologie," III. Band, p. 143.

(2) The tense membranous drums on the *ventral* surface of the abdomen of the male *Cicada*, probably act as resonators, but their entire removal seems very little to affect the loudness of the note.

MOUNT WILSON AND ITS FERNS.

By P. N. Trebeck.

The south-west portion of Mt. Wilson, which is now occupied, is situated N. and N.E. of the Mount Wilson Station, on the Great Western Railway, about five miles in a direct line, but in consequence of a number of deep ravines and gullies intervening the road makes a circuit of 10 miles along the top of the range dividing the waters of the Wollangambe and Bowen Creeks, both tributaries of the Colo River. The road is an excellent one and well kept, and for the first five miles goes along the old stock-route known as Bell's line. It then turns off to the north and reaches the foot of Mt. Wilson 390 feet below the summit. From the railway station to this point, the road traverses the usual Hawkesbury Sandstone of the Blue Mountains, ferruginous in some spots, and maintains an average elevation of 3,000 feet, with some pretty scenery to the east in the direction of Mounts King George, Tomah, and Hay, and the Valley of the Colo, and on the west towards Mt. Clarence and the Valley of the Wollangambe.

At the foot of Mt. Wilson, the basaltic rock and rich brown and chocolate soil are met with, and the sudden transformation from the ordinary dull brown stunted gums, to the most luxuriant growth of the sassafras, mimosas, acacias, tree- and other ferns, and numerous other dark and bright green handsome shrubs, is very charming and grateful to the traveller after the long railway journey and the drive over the sterile mountain country.

Mt. Wilson is ascended by a well made zig-zag road cut out of the rich basaltic hill-side, shaded by overhanging trees, shrubs, and tree-ferns, which form a beautiful avenue nearly to the top of the mount. About three quarters of the way up the zig-zag is a basalt quarry where the pentagonal and hexagonal columnar formation is clearly visible. The road to the seven residences on the mount winds along nearly on the crown of the hill, diverging sometimes a little to the E. and then to the W., at an average elevation of about 3,400 feet. Along some portions of the road the residents have planted long avenues of chestnuts, walnuts, elms, and other English forest trees, all of which are growing in the greatest luxuriance. The various homesteads are surrounded by grounds, orchards, and gardens, where the English fruit trees, shrubs, plants, and flowers grow in great exuberance.

Mt. Wilson extends from the point of ascent about six miles in a general north-easterly direction with a few slight undulating depressions. The highest portions are all basaltic, and covered with the richest soil, growing huge eucalypti, sassafras, shrubs, *Dicksonia antarctica* and other ferns in great profusion, but this rich basaltic soil seldom extends lower than 300 to 400 feet below the crowns of the hills, except in a few gullies, where the detritus has reached a little lower. The ordinary Hawkesbury sandstone of the Blue Mountains is then met with, and no other kind of volcanic or sedimentary rock was noticed. The creeks or gullies nearest to the present residences are called the Waterfall, Cox's, Cascade, and Crab Creeks. At the heads of most of them there is a spring issuing frequently near the junction of the basaltic and sandstone rocks. One well, sunk 22 feet in rich basaltic soil, gives an excellent supply of good water.

The English grasses thrive well; the Cocksfoot appears to be the most in favour and produces a heavy crop of succulent feed. Red and white clover, and perennial rye-grass also grow well.

There are no kangaroos, but an occasional wallaby is seen where any patches of grass occur. Dingoes are sometimes heard at night, but do little mischief.

Mr. J. D. Cox informs me that he has obtained about 60 species of birds in the neighbourhood .These include hawks, owls, one goat-sucker, kingfishers, diamond-birds, magpies, shrikes, flycatchers, robins, the lyre-bird, several species of *Sericornis* and of *Acanthiza*, thrushes, the satin-bird, honey-eaters tree-creepers, parrots, pigeons, one quail, and the curlew.

To the real lover of ferns, Mt. Wilson is as charming a spot as can be found anywhere in our Island. The rich volcanic soil on the crowns and on the sides and bottoms of the creeks and gullies, shaded by the sassafras, mimosa, and other umbrageous trees and shrubs, coupled with the dampness from innumerable small springs, appears exactly suitable to the highest development of the fern species.

The following are those I noted during a short stay. I did not contemplate giving this paper, or would have observed the ferns more closely. There are many more varieties of the genera I have enumerated. I can with much confidence recommend Mt. Wilson as a grand field for the naturalist who takes a special delight in ferns and allied plants. " The Happy Valley " on the Waterfall Creek, in addition to its being one of the most beautiful places in the mountains, contains the greatest variety of ferns I have ever seen in one place, all growing in the greatest luxuriance, many from the strata of the perpendicular sandstone cliffs, which are 120 to 150 feet high. This narrow valley is 2,750 feet above the sea.

Genus, ALSOPHILA.

Alsophila australis. Growing on the sloping sides of the hills and near the beds of the creeks; trunk 12 to 20 feet high, 12 to 24 inches in diameter, and fronds 10 to 15 feet 6 inches long.

Alsophila Leichardtiana. A slender and elegant tree-fern, found only in a few places in this colony, but more plentiful in Queensland. Height 8 to 15 feet, fronds of a dark green, 6 to 8 feet long, spinulose at their bases, with thorns ¼ inch long.

Genus, DICKSONIA.

Dicksonia antarctica. Growing most luxuriantly on the very summits of the hills and down some of the slopes. In some places the trunks, which are covered with rootlets giving a woolly appearance, are 35 to 40 feet high, 18 to 28 inches in diameter, with fronds 6 to 10 feet long.

Dicksonia davallioides. A beautiful hardy variety with creeping rhizome and brown glossy stipes, frond somewhat membranous. Height 2 feet to 2 feet 6 inches. It is easy of cultivation.

Genus, BLECHNUM.

Blechnum cartilagineum. Fronds 2 to 2 feet 6 inches high, with rough hairy stipites.

Blechnum lævigatum. Horizontal rhizome and smooth stipites.

Genus, TODEA.

Todea barbara or *australis.* Growing at the sides, and in the running waters, of the creeks, some of the trunks 6 feet high, fronds, many of which are nearly covered on the lower side with orange-colored sori, 8 to 10 feet long.

Todea Fraseri. One of our handsomest ferns, seen to great advantage at the Happy Valley, Waterfall Creek, where almost every stratum of the sandstone rock, up to 60 or 70 feet above the bottom of the creek, is covered with long rows, growing in the greatest luxuriance, with fronds upwards of six feet long. The rhizomes are frequently 2 to 3 feet high. Plentiful also in the Cascade Creek.

Todea hymenophylloides, a very beautiful membranous fern 2 to 2 feet 6 inches high, but not so plentiful as at Katoomba.

Genus, LOMARIA.

Lomaria discolor, and *Lomaria falcata.* Both very plentiful, the latter forming an elegant plant.

Lomaria (new), which I take the liberty of calling *umbellata.* It is a showy variety with creeping rhizome, found only in one spot in Cox's Creek, 2 feet 6 inches to 3 feet 6 inches high.

Lomaria elongata. Growing in great profusion in many places.

Lomaria filiformis. In the Happy Valley and Cascade Creek, where this fern and certain species of *Hymenophyllum* almost cover the trunks of some of the trees.

Genus, GLEICHENIA.

Gleichenia dicarpa, Gleichenia flabellata. These are not so fine nor quite so plentiful as they are nearer the coast.

Genus, POLYPODIUM.

Polypodium australe, and *Polypodium Billardieri.* Both growing very luxuriantly.

Polypodium attenuatum. Found in the basaltic soil on the slopes.

Genus, ASPLENIUM.

Asplenium bulbiferum. Growing near the head of the Waterfall Creek in damp places, near the junction of the basaltic and sandstone rocks.

Asplenium flaccidum. This variety is rare. It grows on rocks and occasionally on roots of trees.

Asplenium flabellifolium (*repens*). Very plentiful; would make an excellent fern for hanging baskets.

Asplenium flabellifolium var. *cristatum.* This is a pretty sport of the former, and only found in one spot in basaltic soil.

Genus, ADIANTUM.

Adiantum formosum sometimes called *giganteum.* In the Waterfall and Cascade Creeks.

Adiantum Æthiopicum. Only a small patch towards Crab Creek.

Adiantum affine. Found only in one place on Mr. Gregson's land.

This genus appears very scarce at Mt. Wilson.

Genus, DOODIA.

Doodia aspera. Not plentiful.

Genus, ASPIDIUM.

Aspidium aculeatum, and *Aspidium falcatum.* Both growing luxuriantly on the crowns of the hills and down the slopes. Both have proliferous buds near the end of the rachis, which produce leaves and roots before falling off.

Aspidium decompositum. An elegant fern, with fronds beautifully divided.

Aspidium tenerum. A delicate graceful fern with somewhat membranous fronds.

Genus, DAVALLIA.

Davallia dubia or *australis.* Though one of the commonest is an elegant fern, and grows plentifully both in the basaltic and sandstone soils.

Genus, PTERIS.

Pteris aquilina. The common Bracken.

Pteris tremula. Growing in great perfection at Happy Valley, 3 to 4 feet high.

Pteris incisa. Found on the hill sides, but is not very plentiful.

Pellea falcata. Growing near the summits and on the hill sides.

Genus, ALLANTODIA.

Allantodia tenera. This handsome fern grows in great luxuriance at Mt. Wilson, the stipites being nearly 6 feet high, and the fronds 6 feet 6 inches long. A truly graceful and elegant fern.

Genus, HYMENOPHYLLUM.

Hymenophyllum tunbridgense. A beautiful and delicate membranous fern. Very plentiful.

Hymenophyllum flabellatum. Grows in great abundance, frequently forming a dense matted covering on the trunks of certain tree-ferns. There are other varieties of this diminutive filmy fern in the deep gullies of Mt. Wilson. At the Cascade Creek, one kind, having with its matted roots, grown down the stream over a precipitous rock, hangs from it like a handsome festoon.

LIST OF THE FRESHWATER RHIZOPODA OF N. S. WALES.

Part I.

BY THOMAS WHITELEGGE.

Excepting the short paper by Dr. R. von Lendenfeld, published in our Proceedings of last year, there does not appear to be any record as to the nature or extent of this lowly yet interesting branch of our *fauna*. The following list will, I hope, prove useful to students of Australian Biology, and to others more or less interested in the geographical distribution of the family. This list being far from complete, there is a wide field yet open for investigation.

With most of the forms herein enumerated I have been familiar for the last two years, but it is only during the last few months that I have attempted any systematic search for them; hence the localities given are few in number and mostly near Sydney. The student who desires to collect Rhizopods should provide himself with a few wide-mouthed bottles, and a stick to which may be fastened either a bottle or a hook, for the purpose of obtaining plants or mud from deep water. Mosses, dead leaves, fine-leaved aquatic plants, and mud from the bottom of stagnant water should be collected and examined. Mosses such as sphagnum, may be taken home in a box or bottle without water, except that which is retained on the leaves. When required for examination the water should be squeezed out, or if this method fails the material should be washed and the sediment examined.

When gathering aquatic plants in search of any of the *unattached* forms of microscopic life, they should never be lifted entirely out of the water, but floated or pushed into a bottle with as little disturbance as possible. By adopting this method many more living forms will be obtained than would be the case if the plants were lifted altogether out of water.

In the examination of any material it will be most convenient to use only such slips and covers as may be used subsequently for mounting purposes; by so doing any object of interest can be mounted at once. When any object of sufficient interest is seen it should be got as near the centre of the cover glass as possible; all surplus water should then be removed from the edges, and one or two drops of a 1 per cent osmic acid solution put on the slide and drawn in under the cover by means of a little strip of blotting paper placed on the opposite side; after wiping round the edges to remove any water or acid that may remain, the cover may then be luted round with very stiff shellac cement, made by dissolving shellac in spirit. If too much acid is used the objects will become quite black and useless.

I have prepared a goodly number of slides in this manner, of which some mounted over twelve months ago show no signs of deterioration. The objects include—Collared and Flagellate Monads, Amœba, Arcella, Difflugia, Clathrulina, Infusoria, Rotifers, Desmids, Diatoms, and many other microscopic organisms. Rhizopods and Heliozoa are with a little care easily fixed and preserved with their pseudopodia fully extended.

The classification adopted is that given by Prof. Leidy in his magnificent work on the "Freshwater Rhizopods of North America." After each species the author's name with references to descriptions is given, and then follow the numbers of page, plate, and figures in Leidy's monograph, which is the most complete work on the subject in English, and will, I have no doubt be the standard book of reference for many years to come. When the numbers are interrupted, as in the case of *Difflugia corona* in which on pl. XVII. of Leidy the figures are from 1 to 14, whereas the numbers in this list are 1, 2, 5, 6, 9, it means that those forms indicated by the figures only have been seen by me.

RHIZOPODA.

Order 1. PROTOPLASTA.

Sub-Order I. LOBOSA.

Amoeba, Ehrenberg.

A. proteus, Rösel, Insecten-Belustigung. Nürnberg, 1755, III. 622, Tab. CI. fig. A-T; Leidy, F. Rhiz. N. Amer. p. 30, pl. I. figs. 1-8.

Frequent on the leaves of *Lemna*, *Azolla*, and *Utricularia* Shea's Creek, and near Cook's River in a freshwater swamp.

A. verrucosa, Ehrenberg, Die Infusionsthierchen, 1838, 126, Taf. viii. fig. xi.; Leidy, F. Rhiz. N. Amer. p. 53, pl. iii. figs. 1-38.

This species is rather rare. I have seen specimens from only one locality. On *Sphagnum*, Waterloo swamps.

A. radiosa, Ehrenberg, Infus. 1838, 128, Taf. viii. fig. xiii.; Abh. Ak. Wiss. Berlin, 1830, p. 39; Leidy, F. Rhiz. N. Amer. p. 58, pl. iv. figs. 1-18.

Abundant in nearly all the localities mentioned in this list.

A. villosa, Wallich, Ann. and Mag. Nat. Hist. 1863, XI. p. 287, pl. viii.

Very common on dead leaves and decaying vegetable matter. The posterior villi are often hidden from view by the presence of foreign materials such as sand, Desmids, and Diatoms.

Shea's Creek, Waterloo Swamps, and near Cook's River.

Pelomyxa, Greeff.

P. palustris, Greeff, Archiv für Mikros. Anat. 1874. X. p. 51, Taf. iii.-v.

I found this species in abundance on floating masses of *Oscillatoria*, near Cook's River. It attains a very large size, some specimens measuring $\frac{8}{100}$ inch in length, $\frac{3}{100}$ to $\frac{4}{100}$ broad.

DIFFLUGIA, Leclerc.

D. globulosa, Dujardin, Ann. Sc. Nat. 1837, VIII. 311, pl. IX. figs. 1, a.-b.; Leidy, F. Rhiz. N. Amer. p. 96, pl. XV. figs. 25-31, pl. XVI. figs. 1-24.

Frequent on *Sphagnum* in the Waterloo Swamp, and on *Nitella* in Parramatta Park.

D. pyriformis, Perty, Mittheil. Naturf. Gesells. Bern. 1848, 168; Leidy, F. Rhiz. N. Amer. p. 98, pl. X. figs. 1-5.

The typical form appears to be rare, and I have seen only a few specimens; other varieties are the most abundant.

Var. *D. compressa*, Carter, Ann. and Mag. Nat. Hist. 1864, XIII. 3rd series, p. 22, pl. 1, figs. 5-6; Leidy, F. Rhiz. N. Amer. pl. XII. figs. 10-16.

Frequent in Waterloo Swamps, Shea's Creek, and in Parramatta Park.

Var. *D. cornuta*, Leidy, pl. XII. fig. 17.

Shea's Creek and in an old stone quarry in Moore Park.

Var. *D. vas*, Leidy, pl. XII. figs. 2-9.

Same localities as the last named.

D. urceolata, Carter, Ann. & Mag. Nat. Hist. 1864, XIII. 3rd series, p. 27, pl. 1, fig. 7; Leidy, p. 106, pl. XIV. figs. 1, 2, 5, 7, 10.

Shea's Creek and Parramatta. Rare.

D. corona, Wallich, Ann. and Mag. Nat. Hist. 1864, XIII. 3rd series, p. 241, pl. XVI. figs. 19-20; Leidy, F. Rhiz. N. Amer. 117, pl. XVII. figs. 1, 2, 5, 6, 9.

Waterloo Swamp, Shea's Creek, and Parramatta. Not common.

D. acuminata, Ehrenberg, Infus. 1838, 131, Taf. IX. fig. III.; Leidy, F. Rhiz. N. Amer. 109, pl. XIII. figs. 1, 2, 8, 9, 11.

Plentiful near Cook's River, Waterloo Swamp, Parramatta Park, and in Duck Creek, Clyde. Forms like figs. 14 and 20, in stone quarry, Moore Park. Rare.

ARCELLA, Ehrenberg.

A. vulgaris, Ehr. Abh. Akad. Wiss. Berlin, 1830, p. 40, Taf. 1, fig. VI.; Leidy, 170, pl. XXVII. figs. 1, 2, 3, 11, 12, 25, 26, 27 and 28.

Very abundant, almost everywhere, but a very variable species. The numbers of Leidy's figures given above indicate forms similar to those I have observed from many different localities. I have seen forms like figs. 8, 9, 10 and 11 on pl. XXVIII. in Leidy's book, from Shea's Creek; but it is not common.

A. discoides, Ehr. Monatsb. Ak. Wiss. Berlin, 1843, 139; Leidy, F. Rhiz. N. Amer. 173, figs. 14, 15, 16, 17, 18, 23, 28, 30, 31.

This is perhaps the most common of any; it is found associated with *A. vulgaris* and other species in the greatest profusion.

A. dentata, Ehr. Abh. Akad. Wiss. Berlin, 1830, p. 40; Leidy, F. Rhiz. N. Amer. p. 177, pl. XXX. figs. 10-19.

This very beautiful species is rather rare. I have found it only in two localities, in Shea's Creek and Cook's River. In the latter place I found it on *Utricularia*; in the former on the roots of grasses, sedges and floating plants. According to Leidy's figures and description the number of spines is from 9 to 12. The specimens observed by me had from 10 to 15, but their size and general characters are identical with those of European and American examples. The figures given in the "Micrographic Dictionary" and also in Dr. Carpenter's "Microscope and its Revelations," under the name of *A. dentata*, probably represent the var. *angulosa* of *A. vulgaris*.

CENTROPYXIS, Stein.

C. aculeata, Ehr. Abh. Akad. Wiss. Berlin, 1830, p. 40; Leidy, F. Rhiz. N. Amer. 181, pl. XXXI. figs. 1, 3, 4, 12, 14, 23, 24, 27.

A very common and variable species both in the character of the materials by which the test is invested, and in the number of spines.

Shea's Creek, Waterloo Swamps, Cook's River, and many other places.

COCHLIOPODIUM, Hertwig and Lesser.

C. bilimbosa, Auerbach, Zeits. Wiss. Zoologie, VII. 1856, 374, Taf. XIX. figs. 1-13; Leidy, F. Rhiz. N. Amer. 184, pl. XXXII. figs. 1-25.

Frequent on *Lemna* and *Azolla* in Shea's Creek, and on *Utricularia* near Cook's River.

Sub-Order II. FILOSA.

EUGLYPHA, Dujardin.

E. alveolata, Duj. Infusoires, 1841, 252, pl. II. figs. 9-10; Leidy, 207, pl. XXXV. figs. 2, 3, 6, 11, 12, 13, 14, 15.

This is very common and may be obtained in abundance on *Sphagnum*, in the Waterloo Swamps.

TRINEMA, Dujardin.

T. Enchelys, Ehr. Infus. 1838, 132, Taf. IX. fig. IV.; Leidy, 226, pl. XXXIX.

This is a very widely distributed species. It is very abundant near Shea's Creek and in the Waterloo Swamps, near Botany.

Order II. HELIOZOA.

ACTINOPHRYS, Ehrenberg.

A. sol, Muller, Verm. Terrest. Fluv. 1773, p. 76; Leidy, F. Rhiz. N. Amer. p. 235, pl. XL.

Common in nearly all the localities given in this list.

HETEROPHRYS, Archer.

Heterophrys sp. ? I have on several occasions seen a species closely allied to, if not identical with, one figured by Leidy on pl. XLVI. figs. 7, 8, 9, 13. It existed in a pool of water off Bunnerong Road, which is unfortunately now quite dry. In the same place I found also a colourless gregarious species resembling *Raphidiophrys elegans,* but much smaller and destitute of silicious spicules. The pseudopodia are highly sensitive and the creature retracts them somewhat suddenly if disturbed. It also readily assumes an amœboid form if subjected to pressure. I hope to re-examine both these forms on some future occasion.

RAPHIDIOPHRYS, Archer.

R. elegans, Hertwig and Lesser. Archiv für Mik. Anat. X. 1874 ; Leidy, F. Rhiz. N. Amer. 250, pl. XLII. figs. 1-6.

This species is not common. I have seen it from two localities only, near Shea's Creek and in the stone quarry in Moore Park.

VAMPYRELLA, Cienkowski.

V. lateritia, Fresenius, Abh. Senck. Naturf. Gesells. II. 1856-8, 218, Taf. x. figs. 13-19; Leidy, F. Rhiz. N. Amer. 253, pl. XLV. fig. 10-16.

Frequent on *Spirogyra* and other floating Algæ ; often free, but usually creeping over the surface of aquatic plants.

Localities, Shea's Creek and near Cook's River.

ACTINOSPHAERIUM, Stein.

A. Eichhornii, Ehrenberg, Bericht. Preus. Ak. Wiss. 1840, 198; Leidy, F. Rhiz. N. Amer. p. 259, pl. XLI.

A very common species, abundant in the Waterloo Swamp and many other places.

CLATHRULINA, Cienkowski.

C. elegans, Cienk. Archiv für. Mik. Anat. III. 1867, 310, Taf. XVIII. ; Leidy, F. Rhiz. N. Amer. 273, pl. XLIV.

This species is very common on *Nitella* and other fine-leaved plants. I have found it in plenty in nearly all the places I have visited in search of aquatic life. Australian specimens appear to be more luxuriant in their growth than European or American examples, the branched or compound state being the most prevalent, whilst the solitary form is rare.

Order III. FORAMINIFERA.

BIOMYXA, Leidy.

B. vagans, Leidy, F. Rhiz. N. Amer. 281, pls. XLVII, XLVIII. figs. 5-12, and in Proc. Ac. Nat. Sc. Phil. 1875, 124.

A few months ago this species was fairly abundant in my aquarium. I saw altogether about 20 specimens, many of which I examined with great attention. When first placed on a glass slip it often assumes a spherical shape, and remains motionless for some time. Then all at once it begins to send out pseudopodia from all sides, but ultimately they appear chiefly at the ends of the main body of protoplasm. The ramifications, extreme tenuity, and rapid movement of the pseudopodal processes are really marvellous. It is a difficult matter to trace out the actual termination of the branches, on account of their tenuity and ever changing movements. The whole organism looks like an animated spider's web. I have often noticed rounded masses at some distance from, but connected with, the main body by very slender threads. In these masses there was a continued rotation of the granular protoplasm around a large non-contractile vacuole. The time during which this semi-isolation continued, varied considerably, but in one instance it lasted for over an hour. When the return movement commenced the granular matter was conveyed away first, and afterwards the large vacuole broke up into a number of smaller ones, which moved away in quick succession, and were finally merged into the main protoplasmic body. The vacuoles are very numerous, and they move about in all directions with the granular protoplasm. A spherical granular nucleus was seen in several specimens.

NOTES AND EXHIBITS.

Dr. Ramsay exhibited the seed vessel of *Adansonia digitata* (Sterculiaceæ), the Baobab of Africa, about 16 inches in length, and of an elongate oval form, and he stated that he had been successful in growing some plants from the seeds.

Mr. Palmer exhibited a specimen of *Mylitta* sp., from Burwood, known as Native Bread, but so hard as to be quite uneatable. Also, the seed vessels of *Martynia proboscidea.*

Mr. Haswell exhibited a living individual of the species *Astacopsis serratus*, the red variety from Mt. Wilson, which when alarmed or angry emits a distinct "fuffing" sound produced by friction of the joints of the abdomen on one another. Also, a *Cicada*, showing the muscular apparatus and other arrangements by which the "song," commonly but erroneously referred to the vibrating "tympana," is produced.

Mr. Trebeck exhibited a fragment of auriferous iron ore from Mount Morgan. In this rock no gold is visible to the eye, but is nevertheless present in the average proportion of 9 oz. to the ton.

Mr. Wilkinson exhibited a series of bones, scutes, &c., of *Megalania*, a gigantic Lizard from Lord Howe Island, fossilized in a coral rock of loose structure. Dr. Ramsay showed that the species must be regarded as quite distinct from *M. prisca,* Owen, found on the Upper Condamine.

Mr. Wilkinson also exhibited the right ramus of the lower jaw of *Thylacoleo carnifex*, in absolutely perfect condition, and probably, in other respects also, the finest specimen ever discovered.

Mr. Macleay exhibited a specimen of *Caranx ciliaris*, a rather rare fish from Port Jackson, presented to him by J. R. Hill, Esq.

Mr. Smithers exhibited fine specimens of native copper from the Keelbottom Copper mine, near Townsville.

The President exhibited a species of Lamprey *(Mordacia)* from the Nepean River, at Camden. Also an engraving of a very extraordinary *Ichthyodorulite* from the Carboniferous formation in West Australia. Dr. Woodward, who describes it, refers it to the genus *Edestus*, a Carboniferous form from N. America.

Mr. Whitelegge exhibited living specimens of *Amœba radiosa*, *A. verrucosa*, and *Clathrulina elegans*, also a number of mounted slides, containing many of the species enumerated in his list.

Dr. Foucart exhibited a leaf of a New Guinea tree possessing highly dangerous properties, and used by the natives of South Cape for stupefying fish, and poisoning weapons. It was regarded as probably belonging to the Euphorbiaceous plant *Excœcaria agallocha*, known as the "Blind-your-eyes."

WEDNESDAY, 30TH JUNE, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

MEMBERS ELECTED.

Mr. J. J. Witney, O'Connell Street; Mr. H. J. McCooey, Dubbo; and Mr. J. A. North, Moonee Ponds, Melbourne, were elected Members of the Society.

Mr. Skeat was present as a visitor.

The President announced that the Council at its meeting of 23rd June had elected Mr. James Stirling, F.G.S., F.L.S., a Corresponding Member of the Society.

He also announced that the following resolutions had been passed :—

1. That in accordance with the wish expressed by several Members of the Society, that occasional excursions for biological and geological investigation should be organized and carried out under proper rules and guidance, it is desirable that the Council should make suitable arrangements for the management of these excursions.

2. That the following regulations be adopted with that view :—

    A. At each Monthly Meeting of the Council it shall be part of their duty to determine what excursions shall take place during the following month; to fix the time and place of meeting; to nominate some Member or Members on whom the management and guidance of the party shall devolve; and to fix the amount of contribution, if any, payable by each individual taking part in the excursion.

B. An announcement of the arrangements of the Council shall be made at each succeeding Ordinary Monthly Meeting of the Society, and published in the Abstract, so that every Member wishing to take part in these excursions may know exactly in each case the time and place of meeting, and the cost.

C. The funds of the Society are not in any case to be drawn upon for these Meetings.

D. Any member may bring a friend to these excursions, but the same person cannot be admitted as a visitor more than twice in twelve months.

E. Unless specially arranged for and announced beforehand, no lunch or other refreshments will be provided.

3. That Members be invited to suggest suitable places for excursions.

4. That the foregoing resolutions be announced to the Society at its next Monthly Meeting.

In accordance with these resolutions the President then stated that the date of the first excursion had been fixed for Saturday, 24th July, Members to meet at the intersection of the Long Bay Road and Coogee tramway, at 11 a.m., and, under the conduct of Mr. Haviland, to proceed to Botany, via Marubra and Long Bay.

The following donations were announced :—

"Transactions of the Entomological Society of London, for the year 1886." Part I. From the Society.

"The Geographical Distribution of Animals." By A. R. Wallace. 2 vols. From the Hon. William Macleay, F.L.S.

"Journal of the Bombay Natural History Society." Vol. I., No. 2, 1886. From the Society.

"Revue Coloniale Internationale." Tome II., Nos. 4 and 5, 1886. From L'Association Coloniale Néerlandaise à Amsterdam.

"Occasional Papers on the Queensland Flora." No. 1. By F. M. Bailey, F.L.S. From the Author.

"Transactions, Proceedings and Report of the Royal Society of S. Australia." Vol. IV., 1880-81; Vol. VIII., 1884-85. From the Society.

"Journal of the Royal Microscopical Society, London." Ser. II. Vol. VI., Part 2, April, 1886. From the Society.

"Zoologischer Anzeiger." IX. Jahrg., Nos. 221-223. From the Editor.

"Annales de la Société Entomologique de France." 6th Series, Tome IV., 1884. From the Society.

"List of Members of the Geological Society of Australasia, also a Catalogue of Works in the Library of the Society," compiled by R. T. Litton, F.Z.S. From the Society.

"Journal of the Cincinnati Society of Natural History." Vol. IX., No. 1, April, 1886. From the Society.

"The Canadian Record of Science." Vol. II., No. 2, 1886. From the Natural History Society of Montreal.

"Journal of the New York Microscopical Society." Vol. II., No. 2, 1886. From the Society.

"Report of the Committee of Management of the Technological, Industrial and Sanitary Museum, Sydney, for 1885." From the Curator.

"Mémoires de la Société Royale des Sciences de Liége." Deuxième Série. Tome XI., 1885. From the Society.

"Abhandlungen herausgegeben vom naturwissenschaftlichen Vereine zu Bremen." Band IX., Heft 3, 1886. From the Society.

"Records of the Geological Survey of India." Vol. XIX., Part 2, 1886. From the Director.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CII., Nos. 12-14, 1886. From the Academy.

"Feuille des jeunes Naturalistes." No. 187, May 1886. From the Editor.

"Report to the President of the Board of Health upon an outbreak of Typhoid Fever in the Municipal district of Leichhardt, due to polluted Milk." By J. Ashburton Thompson, M.D. From the Board of Health, Sydney.

South Australia, "Report on the progress and condition of the Botanic Garden and Government Plantations during the year 1885." By R. Schomburgk, Director. From the Director.

"Bulletin de la Société Royale de Géographie d'Anvers." Tome X., Fasc. 4 and 5, 1885. From the Society.

"Victorian Naturalist." Vol. III., Nos. 1 and 2, 1886. From the Field Naturalists' Club of Victoria.

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PAPERS READ.

NOTE ON CTENODAX WILKINSONI, Macl.

By William Macleay, F.L.S., &c.

A few days ago I received a communication from Dr. Ramsay, of the Australian Museum, informing me that he had recognized the fish to which I had given the above name, as being very similar to *Tetragonurus Cuvieri*, Risso. My paper was read at the last November Meeting of this Society, and published in Part 4 of Vol. X. of our Proceedings. I therein gave a full description of the fish, as far as visible external characters were concerned, as also a plate representing the fish itself of natural size, and magnified representations of the teeth, scales, &c. I avoided giving any opinion as to the natural affinities of the fish, thinking it best to leave that question to greater authorities on classification than myself. But I certainly was then under the impression that nothing resembling it had ever been described before; the discovery therefore of Dr. Ramsay which I have just mentioned, necessitates my taking the earliest opportunity of correcting my error.

Without a doubt the genus *Tetragonurus* of Risso is identical with my *Ctenodax:* the question of the identity of the species *Cuvieri* of the one genus and *Wilkinsoni* of the other is a matter of minor importance, and can only be ascertained by an examination of both fishes.

Much doubt has always existed as to the proper position of the genus; Cuvier and Valenciennes placing it among the *Mugilidæ*, Lowe among the *Scombridæ*, Müller in the *Notacanthidæ*, and finally Günther among the *Atherinidæ*. The last named position seems to be generally accepted now, but probably only on account of its being the opinion of such a high authority as Dr. Günther. It seems to me an unnatural position, so much so indeed, that in my search for anything resembling the fish I named *Ctenodax*, it never for a moment occurred to me to look for it among the *Atherinidæ*.

But whatever its affinities may be, there can be no doubt of its being a remarkable fish, and the fact that it is found only in the Mediterranean and at the Madeira Islands, and in both places very rarely, and that the only other instance of its existence is the solitary specimen got by Mr. Wilkinson at Lord Howe Island in the Southern Pacific Ocean, are additional peculiarities of much interest.

It is evidently a deep sea fish, its large eyes and very dark coloration are proofs of that. Emery has found the young living in the codfish. (Mittheil. Zool. Stat. Naples, III., p. 283.)

The Lord Howe Island specimen seems to differ from *T. Cuvieri* chiefly in the size of the eye and form of the teeth.

NOTES ON THE RECENT ERUPTIONS IN THE TAUPO ZONE, NEW ZEALAND.

By Professor Stephens, M.A., F.G.S., &c.

In throwing together a few notes upon the recent eruptions in the Taupo Zone of New Zealand, I have been actuated solely by a desire that the groundwork of the extraordinary phenomena which have attracted our attention to that district during the last month might be more clearly presented to our minds than it is at present, and that in this way the exact and detailed accounts of those disasters which we shall by and by receive may be the more readily appreciated and interpreted. It is hardly necessary to premise that there is little, if any, original work in this paper, the object of which is only to diffuse more generally the information which is already sufficiently ascertained. It is likewise unnecessary to remark that the reports which have as yet appeared in our newspapers are imperfect and contradictory, and must therefore be to a greater or less extent erroneous and misleading. I had hoped to have a more consistent history of these events before me at the time when I am now writing (June 28). But it is probable that we may have to wait for some considerable time longer before a full examination of the records of the eruptions as derived from eye-witnesses, and of the more important evidence obtained from subsequent exploration of the new ground, and from the investigation of its transformations by the violent operations to which it has been subjected, can be so far completed as to give the world a full history of these phenomena and a satisfactory explanation of their causes.

In the meantime, therefore, a brief sketch of the Geographical and Geological characters of the disturbed district may be of some little service to those who desire to obtain a rational and coherent idea of the extraordinary phenomena of which, as I have said, we have as yet but confused and broken accounts. The more so, because the chief sources of our information, in the extremely valuable descriptions and maps of the late distinguished Geologist, Ferdinand von Hochstetter, are by no means readily or generally available in Sydney.

It was in the year 1859 that this explorer started from Auckland in March to investigate the country previously though hastily examined by Dieffenbach in 1840. He reached Lake Taupo in April, after a rather discursive journey made partly in Maori canoes and partly on foot, and at once devoted himself to the survey and geological examination of the district. Thence he proceeded to trace the manifold series of hot springs and allied phenomena which crowd the banks of the Waikato and its tributaries, to the point where it strikes away, from the still more energetically volcanic area of Rotomahana, Rotorua and Tarawera into the gorge which conducts its waters to the Middle Waikato district.

From this point he diverged into the famous Lake Region, where he remained until May. In this flying survey he succeeded in laying down a clear and trustworthy draft of the most remarkable points in a very remarkable region, second in interest to none, in his opinion, except the somewhat similar Geyser District of Iceland. The third great collection of allied phenomena, and in many respects the most noteworthy of all, the Yellowstone River Geysers, in the Upper Missouri basin, was at the time comparatively unknown. At any rate he does not, so far as I recollect, even allude to it. I do not doubt that much has been added, by way of filling in, to Hochstetter's sketch, but I have not myself met with any descriptions which have a higher aim than the production of picturesque images for the lovers of the extraordinary, whether in the natural features of the landscape, or in the mode of life of the people who dwell among them; and certainly none which can be considered to supersede his account from a scientific point of view.

The Northern Island of New Zealand, inhabited by a race of Maoris far more hot-blooded and volcanic in temperament than their congeners in the Middle portion of this half-insular half-continental region, is in itself likewise distinguished by the fiery and stormy conditions of its subterranean energies from its more mature and tranquil neighbour. The forces which have been at work in the Middle Island have long been reduced to the condition of strains and tensions, which as they gradually overpower the resistance which deeply folded masses of rock oppose to their energy, may perhaps result in earthquakes, but no longer cause, and probably never again will cause, true volcanic action.

But in the Northern Island, however ancient the origin or first outbreak of these eruptive forces may be, they have continued to the present day, enfeebled indeed like all other forces by expenditure of energy and lapse of time, but still furnishing us with a sort of museum of specimens for all kinds of volcanic actions and products, which has not as yet been quite sufficiently arranged, or even catalogued for scientific purposes.

The turbulent and dangerous fanaticism of certain tribes of Maoris has been, I presume, the main cause of the still existing obscurity and uncertainty upon these heads. This, however, no longer remaining as an obstacle, and a staff of most competent observers being naturally summoned to the scene by the thunders of Tarawera, we may confidently look forward to a not distant period when this district shall be as thoroughly studied and familiar to the geologist as that of Vesuvius.

The cordillera or backbone of the mountain system of New Zealand runs in a general direction from N.E. to S.W. This structure is clearly shown by the sea-contour of the Middle and South Islands, but is masked in the North Island by a broad spur or N.W. upheaval which brings the northern line of emergence into a position almost at right angles to the main strike of the rocks which form the southern mass. N.E. of Cook's Straits, however, these older formations retain their leading bias of fold and something of their altitude. They form the south-west coast which stretches from Wellington to East

Cape, extending inwards to a rather uniform distance of about 50 miles, and are flanked on both sides by volcanic tertiaries. The formation, however, of the central portion which belongs to the Maitai series of Dr. Hector, is, according to his determination, of Lower Carboniferous character. They correspond consequently to the rocks of the same or approximate period with which we are familiar on the northern and southern flanks of our Upper Carboniferous area, and though much more remains to be worked out in both countries, the general conclusions at which Dr. Hector has arrived are not likely to be much modified. (1)

Now this S.E. coast range (known as the Rimutaka, Tararua, Ruahine and Kaimanawa ranges) in its run of over 300 miles from Cook's Straits to East Cape, is flanked on its N.W. side by a broad tract of country the original formation of which has been completely broken up and obliterated by volcanic action, and whose N.W. slope has been fractured, dislocated and overwhelmed on a gigantic scale. For the characteristic Maitai rocks do not reappear except in small isolated scraps until they emerge as ranges or parallel folds with a N.N.W. trend, starting from a line running N.E. from Aotea. The bearing of these ridges, which flank the Middle Waikato and the Thames, is therefore inclined at an obtuse angle to the original strike of the S.E. range.

All the intervening ground is covered with the results of volcanic action. In the first place, from the Bay of Plenty to the Bay of Wanganui there stretches N.W. of the Ruahine Ranges a long and comparatively narrow valley, the general floor of which is formed of volcanic ejecta, mainly pumice, arranged in gradually sloping plains or successive terraces. The highest point or transverse watershed of this valley is marked by the twin giants Ruapehu, an extinct volcano over 10,000 feet in height, and covered with perpetual snow and glaciers, and Tongariro, which has maintained a certain amount of activity up to the present time. From this centre the Waikato, the Wanganui, and the Wangahu rivers take their respective courses. The north-western sides of this valley are formed by the edge of a vast plateau of trachytic lava, emitted probably from fissures in the first instance, though subsequently penetrated by a few cones of eruption. These appear to be more frequent in the less elevated portions of the plateau, and on the isolated patches which rise near its margin, a fact which may indicate a very great thickness in the central portion of this trachytic area. The whole plateau is densely wooded, and intersected with deep valleys, along two of which the Waikato and Wanganui make their way in divergent directions. To the N.W., but quite separated from these trachytes is the Pliocene basaltic plateau of the Lower Waikato. The former region therefore appears to be occupied by the oldest volcanic rocks which are to be found in the wide space between the Maitai rocks to the S.E., and their re-appearance on the Thames. And it would seem that these trachytes underlie the pumice beds of the Taupo Zone throughout, and that these latter just conceal the line of contact of the former with the aforesaid Maitai carboniferous rocks. For at both ends of the Taupo Lake, and in like manner to the N.E. of Tarawera, this trachytic formation emerges in insular patches from the pumice, supporting in each case true cones of eruption which have been subsequently thrown up through it. These are all represented by Hochstetter as having completed their periods of activity by forming a central cone or plug of a more silicious lava, rhyolite, within the crater of each. The same rock forms a margin to Lake Taupo, and further occupies the whole area of the Lake district.

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(1) The chief and most characteristic fossils of the Maitai series are *Spirifera bisulcata*, *Productus brachytherus*, *Cyathophyllum*, and *Cyathocrinus*. (Hector, Handbook, N. Z., 1879, p. 26), and these are also enumerated among the Lower Carboniferous fossils of N. S. W. (Wilkinson's Report, &c., 1882.)

Now this rock is of the same materials as Obsidian, which is its glassy condition, cooled rapidly, so as to prevent the separation of the constituent minerals, and under pressure, so as to compress whatever gaseous matters it might contain from normal expansion. Pumice on the other hand is the same material charged, in its original mass, with an enormous proportion of compressed gas (steam) which expanding as the lumps of liquid rhyolite are hurled high into the air and relieved from even ordinary atmospheric pressure, forms a froth which is so immediately cooled and solidified as to retain its spongy character for ever. Of these materials the whole surface of the Taupo Zone is composed. No wonder then if heated alkaline waters percolating through very hot and soluble rocks of this kind in the Rotomahana country should become heavily impregnated with silica, to be deposited as their temperature falls, and upon exposure to the air, in those beautiful Sinter Terraces which have made the name of an otherwise insignificant little lake famous throughout the world. (1)

If we follow the Waikato from its sources on the N.E. flanks of Ruapehu and Tongariro, we shall see that it leaves upon the left the dormant volcanoes of the Kuharua District, rising from their more ancient base of trachytic lava, and still maintaining in their innumerable hot springs very sufficient evidence that their energies are not even now quite worn out. Thence it flows into the now tranquil basin of Lake Taupo, sunk as it were into the tertiary pumice beds, but revealing in its shores the almost unbroken rim of rhyolitic lava which underlies them.

From this lake the river itself and its tributaries, beset with boiling springs and geysers, leaves the Lake District on the right, and turning sharply to the north-west, cuts its way through the plateau to the broad expanse of the Middle Waikato.

It is remarkable that the very margins of the Lake District drain outwards to the Waikato, and not inwards to the lakes, though these lie at a lower level. And this seems to indicate that the water supplies for the hot springs of Rotomahana and its neighbourhood must travel by subterranean channels, and in an opposite direction to the surface drainage, in their course to ultimate emergence.

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(1) Dr. Hector has observed that the Sinter of the Lake District, deposited by heated landwaters, is represented in White Island, where seawater alone has been concerned in the decomposition of the mother rock, by Sulphate of Lime.

Some of the subterranean streams which thus rise to the surface under considerable hydrostatic pressure may originate in the mountainous region to the S.E., and some portion may also probably be derived from Lake Taupo and the Waikato drainage. It is obvious that the springs must have their origin in the rainfall of some district of larger area than that limited basin from which the Kaituna and Tarawera flow. This is further divided into two minor basins, Rotorua to the East, which is only a few miles in diameter, and Tarawera, which is four times as wide, and it is encircled by a lofty barrier of rhyolitic lavas broken only to the N.E. for the outlet of the river Tarawera, and presenting the appearance of a vast general crater rim enclosing the separate crater lakes of Rotokakahi, Rotomahana and Tarawera.

It is worth notice that the water level of the first stands three hundred feet higher than that of the others, indicating an independent and probably later origin for this crater.

We are then in possession of these facts or reasonable inferences,—First, the area of the Lake district is as a whole about equal to that of Lake Taupo; secondly, both tracts are surrounded with a rim of rhyolitic lava, the most recent of the local volcanic products, forming in the one case an elevated barrier or mountain ridge enclosing several lakes and mountains of volcanic origin, in the other a sunken wall capped by pumice deposits. Now Lake Taupo itself appears to have been formed by a long series of explosions from more than one volcanic vent within its circumference, rending away and dispersing their materials, and forming or at least assisting to form the great pumice deposits of the whole region to N.E. and S.W.

And it is impossible to avoid the conjecture that all this region, the Lake District, is undergoing a similar series of processes to that which has resulted in the formation of the older and single lake. By degrees, one would suppose, the greater portion of the solid elevations over this area may be blown away or sink into the cavities formed by successive explosions, until at last when the violence of the subterranean heat has been exhausted, a tranquil lake, like that of Taupo, may occupy the scene of the late and present turmoil.

It is noteworthy that the explosive centres are travelling to the N.E.: Ruapehu and others formerly active, but now extinct, and Tongariro at present still slightly active lie to the S.W. Then the hot springs of the Kuharua country, the geysers and hot springs of the Waikato, and, with still increasing activity, the Rotomahana marvels continue the chain to its N.E. culmination in the ever active insular volcano of White Island.

This gradual decrease in activity as we move to the S.W. along the line of disturbance seems to be in harmony with the view that the present condition of Taupo is only a more advanced stage of the same series of which we see some of the preceding steps in the late explosion, and that in the course of ages Tarawera and Rotorua will come to reproduce a basin of equal tranquillity for themselves.

If there has been in the case of Tarawera no actual eruption of lava from crater or fissure, there seems to have been at least an enormously increased energy of thermal action, involving the actual incandescence of steam and other gases, and of the materials which their discharge shot up in the clouds. And it does not seem probable that so great and so sudden a paroxysm could have been produced by any cause short of a real rise of the fluid rhyolitic lava, either up unseen funnels left by former explosive action, or up new rents, whose rupture might have caused the shocks of earthquake which appear to have been so frequent and so violent.

To what extent this lava may have been itself charged with steam under intense compression may be a question difficult of determination. But seeing how the whole country teems with springs, there is no difficulty in supposing that such a column of white-hot lava moving upwards would meet with abundance of percolating waters which it could almost instantaneously change into explosives of prodigious power.

The cessation of upward movement in the lava column, which must be consequent on so vast a loss of heat as is involved in the expenditure of so much steam power, will naturally give some intervals of comparative repose to the surface. But after a time the subterranean pressures—whatever their origin may be—are likely to repeat their previous action, the fiery liquid will again rise through the water-bearing strata, and the same series of explosions recommence. While lava is free from water, either involved in its mass or in contact with it, its flow will be regular and its cooling gradual; it will produce streams or hills or cones of lava, and will therefore tend to accumulate to some extent about its vent. When, however, the reverse is the case—and steam is generated at a white heat and under enormous pressure, the resulting explosions, as at Krakatoa, scatter into space not only the aforesaid accumulation, but also the new and active lava itself. (I leave out of consideration the ordinary process of cone formation with tuff, fragmentary lavas and pumice, as beside the present question, since neither Tarawera nor any of the other volcanic eminences about these lakes seem to have been so constructed). Such a rise in the temperature of the lower portions of the siphons of these springs as would be produced by a movement of molten rock towards the surface would certainly stimulate their action in the highest degree, while the more intense heat in the rocks in immediate contact with the lava would, as certainly, result in the rapid formation of intensely expansive steam under intense pressure, which, even if we put out of the question the steam which is originally or at least actually engaged in the lava itself, is sufficient to account for the tuff and pumice (if not lava) eruptions at Tarawera. Nor can one readily imagine any other cause which would readily bring about so sudden an access of violence in the ordinary action of hot springs, together with simultaneous volcanic discharges of very considerable intensity.

Geysers are but little dependent upon waters derived from a distance. They are not phenomena of the same kind as continuously flowing hot springs or artesian wells A very small quantity of water is sufficient to keep a large geyser in work, the outflow in many instances being inconsiderable. A heated stratum of rock, at no very considerable depth from the surface, perforated by a funnel or vertical pipe with orifice above, open to the hot rock below, and receiving a small influx of percolating waters, is the only apparatus required. It is, however, curious to observe that geysers are at present confined to the three regions mentioned above—Iceland, the Yellowstone and the Taupo Zone; and that the characteristic rock in each is rhyolitic lava of the same character. (1)

It will be very interesting to watch for further symptoms either of subsidence and quiescence of the subterranean forces, or of another outbreak which seems to me the more probable, and is indeed involved in my hypothesis of an upward movement of lava in the throat of Tarawera. If such actions should recommence we should be justified in feeling some apprehension of a renewal of true volcanic action, long, but how long no one can tell, dormant in this region.

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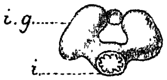
(1) At the last February meeting of the Geological Society, Professor Judd, F.R.S., &c.. exhibited photographs of the geysers and terraces of New Zealand, taken by J. Martin, Esq., F.G.S. In the instantaneous photographs of the geysers, the explosive action of the steam which is still engaged in the water after its rise into the air which might have been conjectured, but had never been observed before, is distinctly shown. 'The body of heated water, after its rise from the geyser-tube is seen to be violently dispersed, probably by a liberation of high pressure steam.'



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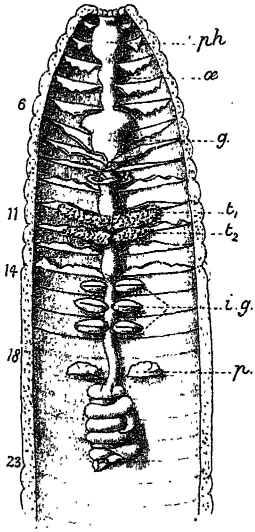

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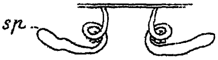

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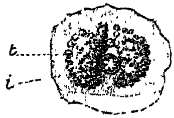

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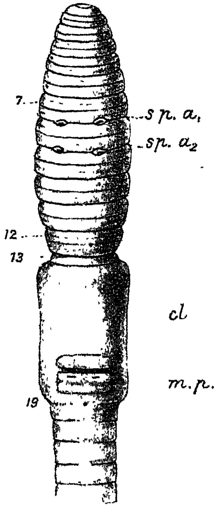

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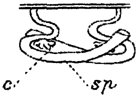

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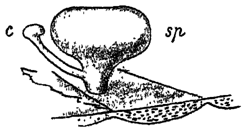

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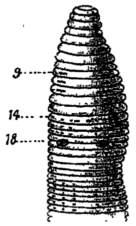

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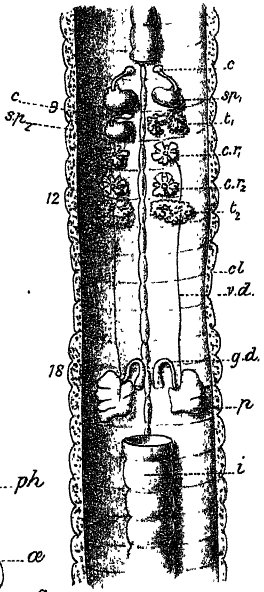

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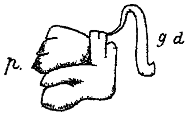

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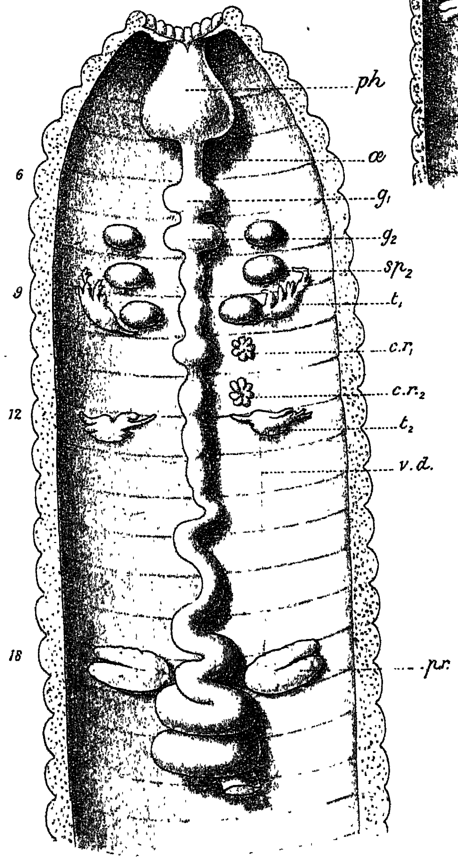

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NOTES ON AUSTRALIAN EARTHWORMS.

PART I.

By J. J. FLETCHER, M.A., B.Sc.

(Plates VIII. and IX.)

In his well-known work on "Vegetable Mould and Earthworms," Mr. Darwin, probably influenced by the recollections of his travels over the Hawkesbury sandstone country during a very hot and dry month (January 1836), says that, until he was informed by Mr. Krefft to the contrary, he should scarcely have thought earthworms would be common in New South Wales with its dry climate. Mr. Krefft's information was, however, of a general nature, and from the character of the castings sent by him to Mr. Darwin, probably referred only to the worms found in the neighbourhood of Sydney. Having myself collected specimens of five new, and one undescribed species of earthworms from two localities, both oases of rich volcanic soil in the Hawkesbury sandstone formation, and having heard from gentlemen who have actually seen specimens, of the existence of large worms in the Hunter and Manning River districts, it seems safe, considering how many rich tracts of similar country are yet unsearched, to hazard the conjecture that, when the earthworms of this colony have been systematically collected and described, it will be found, at any rate in the coastal districts where the soil is good, that they are by no means scarce, and, as regards both individuals and species, will compare favourably in point of numbers with earthworms in other parts of the world. As there are several new worms from Queensland in the Macleay Museum, and as both Dr. Ramsay and Mr. Masters have noticed large worms in several districts of the same colony, a similar statement may be made concerning both it and, probably, the coastal districts of more or less of the whole continent, wherever there is good soil. The alluvial flats in some inland districts are not destitute of worms as I shall mention later, but with respect to the extensive plains of the interior where the rainfall is small, the case may be different, and I should be glad to receive information on the subject.

Up to the present time only three species of earthworms have been described from Australia, with a fourth (*Lumbricus orthostichon*, Schmarda) from Tasmania. This last was originally described as from New Zealand, but this locality, on the authority of Captain Hutton, is incorrect. Two of the described species (*Lumbricus Novæ-Hollandiæ*, Kinberg, and *Digaster lumbricoides*, Perrier) are from New South Wales, the third (*Megascolides australis*, McCoy) being from Gippsland, Victoria. At present I have met with only one of these species.

From gardens, grass paddocks, uncultivated lands, and old quarries in Sydney or its suburbs I have obtained specimens of four or five species of worms. Of these, one is without doubt Kinberg's species; a second seems to be a European introduced species (*Lumbricus olidus*, Hoffmeister); a third is a small perichæte worm which appears to be closely allied to, if not of the same species as, much larger worms found at Burrawang, and of which a variety occurs at Mount Wilson; a fourth, of which I have found only three immature specimens all devoid of a clitellum, has two gizzards, and appears to belong to Perrier's genus *Digaster*, but is different from the species described by him from Port Macquarie; while a possible fifth species, known to me so far only from the Elizabeth Bay garden, is at present un-identified. I did not find the first of these, which seems to inhabit comparatively poor soil, either at Burrawang or Mt. Wilson, but it is evidently a wide-spread species in this colony as, through the kindness of two of our members, Messrs. J. R. Garland and A. G. Hamilton, I have received specimens of it from Wagga Wagga, and from Guntawang near Mudgee, and I have found it myself on the banks of the Turon River, about five miles from Capertee; thus showing that the alluvial flats of some inland districts are not destitute of worms.

Some or all of these worms cast on the surface abundantly during and just after wet weather especially in spring and in autumn. At such times also worms may frequently be found on the surface under logs and stones without the trouble of digging for them; such situations, because they retain moisture longer, are favourite resorts for them, and accumulations of castings may often be found under large logs, when none are to be seen elsewhere. Last March after heavy rain I dug up a number of worms (*L. Novæ-Hollandiæ*), many of which were snugly coiled up in little chambers at the bottoms of their burrows, and this is doubtless the usual way in which they exist during dry periods. Like their European congeners, as mentioned by Mr. Darwin, after heavy rains many worms of this species may be noticed crawling about aimlessly or lying dead, on the garden paths or even on the pavements in the suburbs. This was very noticeable during the early part of this month (June).

For prolific hunting-grounds for worms, the neighbourhood of Sydney will not compare with the rich volcanic soil of Burrawang and of Mount Wilson. These two localities with Sydney form the angular points of a triangle, of which the two sides meeting at the metropolis are each about 50 miles long, as measured on the map, while the third is somewhat longer.

Burrawang township is situated on the coach road from Moss Vale to Kiama, at a distance of 10 miles from the railway. The elevation above sea-level is about the same as that of Moss Vale, namely 2200 feet. The district varies from undulating to hilly, many of the hills being still capped with basaltic boulders. It is well watered with perennial creeks, and has an average annual rainfall probably not less than that of Moss Vale (49 inches). The rich soil is due to the decomposition of a sheet of lava which, the Government Geologist kindly informs me, probably emanated from somewhere near what is now Bowral, and over-spread more or less of the Hawkesbury sandstone formation of the district. The great depth of the rich red or chocolate-coloured soil may be noticed in the road-cuttings, and I have been told that in some places near Robertson it is as great as 25 feet. In one poor paddock on the farm where I procured my specimens, a sand pit shows about 6 feet of soil resting upon sand. The sandstone is not everywhere covered, for about half-a-mile from this farm it crops out in precipitous cliffs, and a little further off there is an uncovered tract of about 100 acres, the stunted vegetation of which both as regards its general appearance and the species of plants, presents a striking contrast to the surroundings, and instantly calls to mind the neighbourhood of Sydney. Elsewhere the large size of the Eucalypts, the abundance of tree-ferns, and the large tracts of thick Sassafras brush, much of which however is now being cleared, testify to the richness and fertility of the soil.

In this locality I have obtained examples of four new, and one undescribed species of earthworms. One of these (*Didymogaster silvaticus*) seems to be restricted to the Sassafras brush, where it is to be found in and under rotten logs, on the substance of which it feeds. From information kindly given me by Mr. C. S. Wilkinson I have since found this worm under similar circumstances in Sassafras Gully near Springwood on the Blue Mountains. The first specimens of this species which I saw were shewn to me some two years since by Mr. Haswell, to whom they were given by the Hon. James Norton. It seems to be a common worm in the brush country, as there are specimens of it in the Macleay Museum from Jervis Bay, and from an unknown locality, possibly Springwood, from which place also I believe Mr. Norton's examples came. I did not find it at Mt. Wilson though it probably occurs there.

The other four species all live together in the more open country timbered with Eucalypts, though they may also inhabit the rich soil of the brushes. As yet I have collected only in a few paddocks on one farm, so that it is quite likely that other worms remain to be discovered in the district, which is occupied by dairy farms, agriculture not being carried on to any great extent.

During three of my visits to Burrawang I have been able to follow the plough, and one could not in any other away get such a good idea of the abundance of these worms. On one occasion when the length of the furrows was about 80 yards I walked behind the plough and counted all the worms I could see either in the furrows or sticking out of the overturned clods, and I found that for a number of furrows the average number of worms visible under these circumstances was about 50 per furrow. Allowing a foot for the width of soil turned over for each fresh furrow, these would give nearly 10,000 worms to the acre. This is a small estimate compared with that given by Hensen for European worms, namely 53,767 per acre (1), and quite insignificant compared with two given by Urquhart for New Zealand worms, namely 348,840 and 784,080 per acre (2). But while Hensen's estimate is for worms found in gardens, in which situations he believes they are twice as numerous as in cornfields, and Urquhart's are for worms living in pasture land, which in one case had been 17 years in grass, my estimate is for worms in virgin soil, for the land to which I refer was not cleared during my earlier visits, and it was being ploughed for the first time on the occasion to which I refer. Moreover, my estimate is obviously below the mark for several reasons. In the first place the plough did not turn up the soil to a depth exceeding six inches if so great, and there were probably some worms below this level; and secondly if the clods had been broken up and carefully examined more worms would have been found. Hensen takes one gram (15·4 grains) as his standard of weight of a single worm, and Urquhart gives 6 grains as the average weight of his specimens, but that of the Burrawang worms would, I think, exceed the first of these weights, the largest worms, which however are least numerous, of which I have one specimen measuring 30 inches and a still larger one measuring 42 inches, probably weighing over 4oz. Allowing therefore for the large size of the worms and for the requirements of additional space on this account, it may fairly be conceded that, for virgin soil, Burrawang is well provided with earthworms, though of course it is possible that the particular spot referred to may have been an unusually favourable one. Doubtless, as is the case elsewhere, the occupation of the land by man will lead to an increase in the number of worms, but, as it is quite exceptional in most country districts for farmers to manure the ground, the increase may be slow. A few miles off at Robertson I went to look at a piece of land which was being ploughed, and which the ploughman told me had been cropped twice, once with corn and once with potatoes, and though I found the same species of worms, I find on referring to my note-book that they did not strike me as being more numerous than I had seen elsewhere (1).

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(1) Quoted by Darwin, *loc. cit.* p. 159.

(2) "On the Habits of Earthworms in N.Z." Trans. and Proc. of the N.Z. Inst. Vol. xvi, 1883, p. 269.

I have mentioned that the worms of these four species live together, by which is meant that in the same furrow, or even in a few yards of it, or by digging up a few square feet of soil in a good spot, one may obtain specimens of all four

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(1) As the abundance of worms either at Burrawang or Mt. Wilson at the present time is not altogether, if at all attributable to the advent of man, since in both localities they may be found in undoubtedly virgin soil, the following facts are interesting by way of comparison. In "Nature" for 1884 (Vol. XXIX. pp. 213 and 406) will be found two letters in which the writers say, that earthworms do not exist in the prairies of the Canadian North-West, and in the United States in those of Kansas, nor in the Indian Territory, Idaho, and Washington Territory, possibly in some of these places, as the writers suppose, on account of the prevalence of intense cold, and of prairie fires, or because the soil is more or less alkaline. On p. 503 in a third letter, an American writer commenting on the first, says :—"It is well-known to settlers on virgin soils in this country that in the first tillage of the ground they will see no earthworms. This is equally the case whether they settle upon prairie land which has been swept annually by fires, or upon wood land which has been cleared for cultivation, and which has never been burned over. . . . . But, until settlement and tillage by man there is no trace of earthworms even in those most favourable localities called "beaver meadows." At first they are found about the stable-yard, then in portions of ground enriched by stable manure, garden or meadow, till at length they may be found in all soils, either those cultivated or those pastured by domesticated animals. . . . . The frontier settlers in Mukoka in the Canadian Dominion. . . . . tell me that until a place has been inhabited for five years it is useless to search for the earthworm." According to this writer it would appear to be introduced worms which eventually become so numerous.

kinds in different stages of growth. The largest of these (*Notoscolex grandis*) though not so gigantic as certain worms found in Brazil, in Ceylon, or at the Cape, nor as the Gippsland worm of which Professor McCoy measured an example 70 inches long when held up, is still a large worm, one example among my spirit specimens measuring 42 inches, and being of proportionate thickness. The other three, one of which is a perichæte worm—that it has a more or less complete circle of bristles round each segment—are smaller, but still fair-sized worms ; their dimensions and characters will be given in the systematic part of this paper.

At Mt. Wilson as I shall mention presently, the abundance of worm castings on the surface is very striking, but at Burrawang, strange to say, the worms do not, as far I can discover, cast on the surface. This statement may be qualified to the extent, that on a part of the farm, where the soil is so poor that a brickyard was opened for a time, after heavy rain small worms may be seen under stones and logs, beside which one may occasionally find a small quantity of their castings. But in the best paddocks such as I have seen ploughed, I have never been able to find the castings on the surface, nor under any circumstances have I ever found the castings of the big worms above ground, though I have searched carefully over a piece of land before ploughing, and yet in the course of an hour have seen the same ground teeming with worms only a few inches below the surface. I have been to Burrawang twice in midsummer, twice in midwinter, and once in early spring, yet my experiences have always been the same as regards the general absence of surface castings. On the occasion of my first visit not knowing where to look for them, and seeing no indications on the surface, I did not get to know that worms were found there, until I questioned the men about the place. But though the worms do not cast above ground their castings are abundant enough in their burrows, and very often the clods turned over by the plough are simply riddled with castings up to within a few inches of the surface. The best opportunity of examining these, however, is furnished by the earth round the roots of fallen trees. Many of the large Eucalypts on the farm have been "ringbarked" for some years, and from time to time especially during high winds after rain, some of those on sloping ground fall, and their numerous, long, spreading roots tear up large quantities—often several cwt—of the soil compacted round them, so as to present the appearance, when seen from below, of large discs sometimes six or eight feet in diameter. Here the burrows of worms of all sizes, most of them completely plugged with cylindrical castings, may be found running in all directions, some of them nearly horizontal. Such places are evidently favourite spots with the worms, and they probably habitually live in them, or they perhaps specially resort to them for breeding purposes, or during dry periods. Generally if such trees have not been down so long that the earth has become dry, one may count upon finding two or three big worms by digging away the soil; and it is in this way that I have obtained many of my best examples. (1) Still I have never been able to find surface castings about the bases of the standing trees, nor have I found that the burrows open on the surface in such situations. If, as I suppose, the worms come to the surface only exceptionally or not at all, it may at first sight appear difficult to understand under what circumstances copulation takes place. Nevertheless as D'Udekem (2) says of *Lumbricus communis* var. *cyaneus*, "cette variété parait sortir plus difficilement de la terre, que les autres; l'accouplement parait se faire sous terre," it is possible that a similar state of things obtains with the worms in question.

The burrows run perpendicularly, or more or less obliquely, and are sometimes even somewhat devious, as one may see by tracing the course of a worm; so that on one occasion in trying to dig out of its burrow a very large specimen, which I saw for an instant and then lost sight of, I unintentionally cut off a considerable piece of both ends with one stroke of the spade. The surface of the burrows in firm soil is perfectly clean and apparently without any special lining, and never in any case have I observed extraneous matter such as leaves, which might have been dragged in from the exterior. The plough generally cuts off a few inches of the tails of the big worms or lifts the earth right off them, but with the smaller worms one may find as many examples with the anterior end uppermost as not.

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(1) I do not know at present whether the worms live in this way about the roots of living trees; possibly such situations would be too dry for them on account of the absorption of moisture by the roots.

(2) Mém. Acad. Roy. de Belgique, 1863.

On page 110 of Darwin's book will be found an account of the depths—3 to 8 feet—to which European worms burrow. In our dry climate it might be expected that worms, at any rate in dry seasons, would extend their burrows to even greater depths, and possibly it may be so. At Burrawang I do not think the worms usually burrow to as deep as 6 or 8 feet, though I have only one piece of negative evidence to offer in support of this opinion. Before my later visits a road leading to an adjacent farm had been partially made, and the crown had been taken off the top of a small rise for a width of perhaps 10 yards, and to a depth in the deepest part of about 3 feet. During my last visit the road was approaching completion, and two men were deepening the cutting to a depth of four or five feet more. I made several visits to the cutting, and saw some tons of earth excavated, yet I could not find a single worm nor see any castings. Either the worms had all been removed in the preliminary excavation, or the soil just there was devoid of worms. The traffic over the road was too insignificant to cause worms beneath the surface any discomfort, and in the paddock on the other side of the fence not more than 50 yards distant I had seen the plough turn them up in abundance, so that it is difficult to believe that this particular patch of very deep and good soil was destitute of worms, and it seems plausible to suppose that they were removed in the first instance. On questioning one of the men he told me that the worms were not found in the sub-soil, but whether his experience was limited to this particular instance I do not know.

During my last visit several inches of rain fell in three days, and though on a road in one paddock I saw a few small worms and noticed tracks, it had not dislodged any worms from the ground which I saw ploughed the day after it cleared up (1). Neither do I think it was entirely owing to the rain that the worms were so close to the surface on this occasion, as on each of my three visits during ploughing the result has been the same, as regards the abundance of worms and their proximity to the surface. In Europe the worms are obliged in winter to burrow deep to avoid the cold, but at Burrawang, though cold, from its greater elevation, compared with Sydney, the fine sunny days which prevail during frosty weather probably prevent the worms from suffering discomfort from the cold. In summer time there is no ploughing going on, but one can always obtain worms by digging in suitable ground without going very deep, though probably at this season the worms are not quite so close to the surface as the winter ploughing shows them to be then.

The perichæte worm, when handled, wriggles and squirms in a very lively fashion; and when placed on the ground it soon burrows out of sight. Two of the other worms are less lively than this one, while the big ones are remarkably sluggish and passive. The day after ploughing if the birds have not found them out, specimens of these three may be found dead on the ploughed ground apparently without having made any efforts to burrow into the ground again. On one occasion having brought from the field more worms than I required I put two on the ground in the garden where they were lying dead next day. When the worms are held in the hand for a minute or two, the milky perivisceral fluid wells out of the dorsal pores in considerable quantities. When put alive into spirit it comes out in jets, which are rendered visible by the coagulating effect of the spirit. Occasionally when an extended worm is touched unexpectedly the perivisceral fluid is squirted out in jets, but this is most noticeable in the brush worm, which does it almost habitually when irritated. This may perhaps serve some defensive purpose, but it seems to be due rather to the sudden contraction of the body, and this view seems likely because the body-wall of the brush worm is more than usually thick and muscular, and the animal is capable of contracting its body into a remarkably small compass. Professor McCoy says that the Gippsland giant worms are brittle, that when alive they emit an odour resembling that of creosote, and that fowls will not eat them even when chopped up. The Burrawang worms will stand a considerable amount of hauling without damage, they are quite free from any offensive smell, and poultry eat them greedily.

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(1) Of very large worms, from 4 to 6 feet long, from South Africa, originally described and figured by Rapp, and recently re-examined by Beddard, the latter says :—"These monstrous worms appear to be fairly abundant in the neighbourhood of Port Elizabeth and other parts of the Cape Colony, but are only rarely seen ; they do not seem to move about at night like our British worms ; only heavy and prolonged rains drive them to the surface from their underground burrows ; on such occasions, as I am informed by a correspondent, which only take place a few times a year, the ground is covered by hundreds of these creatures slowly crawling about in all directions ; as a general rule they do not return into the earth after the rain has ceased, but remain above ground, and are shortly killed by the sun." (Nature, Vol, XXX., p. 571. October, 1884.)

The other locality, Mt. Wilson, is about 3,400 feet above sea-level. Except for the spur which the road follows, it is entirely surrounded by a labyrinth of gullies, and the country round is of a very barren and rocky description (1). The Government Geologist says of it :—" At Mount Wilson near the Great Western Railway, an intrusive mass of dense augitic basalt containing crystals of oligoclase has burst through the Coal Measures and Hawkesbury sandstones and flowed out and covered the latter. Wherever patches of this trap rock occur the soil resulting from the decomposition supports a most luxuriant growth of vegetation, including tree-ferns and splendid timber trees of Eucalypti. These patches of dense vegetable growth amidst the rugged Blue Mountains are in striking contrast with the stunted timber and scrub seen almost everywhere upon the sandstone formation." (2)

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(1) A general account of Mt. Wilson will be found in Mr. Trebeck's paper, *ante* p. 491 ; also from the pen of Mr. Du Faur on p. 58 of the "Railway Guide of N. S. W."

(2) Notes on the Geology of N.S.W., p. 62. By C. S. Wilkinson, F.G.S., F.L.S.

Here worms, judging by the abundance of the castings, are individually as numerous as at Burrawang. As there was no ploughing going on, I was dependent on digging for a supply of specimens, which I found on subsequent examination to belong to three species. One of these is a perichæte worm at present not known to me from any other locality, and which I have named *Perichæta Coxii*, after Mr. J. D. Cox, from whom I first heard of the existence of earthworms at Mount Wilson, and to whose kindness and hospitality I owe the opportunity of collecting specimens there. This seems to be the most abundant worm at Mount Wilson, and is to be found not only in the soil on the top of the mount, but also in the gullies about the base of it considerably below the level of the basaltic capping, wherever the soil washed down from the high ground, and mixed with the decaying vegetable matter, forms a rich compost. The second is also a perichæte worm of which I obtained only a few specimens, which appear to be a variety of a species (*P. australis*), which I found more abundantly at Burrawang, and of which stunted specimens are to be met with in the poor soil about Sydney. Of the third species I obtained only a single, young specimen, also a perichæte worm, which differs from the others, among other things, in having four pairs of spermathecæ instead of two. The only other Australian worms with a like number of spermathecæ that I know of, are in the Macleay Museum, and came from Queensland, and have not yet been described. (1) I therefore postpone the consideration of the third Mt. Wilson species until I can obtain a further supply of specimens. I heard of larger worms than any I obtained, and these perhaps may also be new.

Surface castings abound every where, in the open, under and at the sides of prostrate logs, at the base of walls of rock, and under overhanging ledges, and this both on the summit of the mount and in the gullies. Nothing could be more striking than the difference between Burrawang and Mt. Wilson in this respect.

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(1) Since the above was in type I have found two specimens of a small perichæte worm with four pairs of spermathecæ, at Seven Hills near Parramatta.

The castings form rugged, convoluted masses plainly indicating their origin, often several inches above the ground, but too irregular and not standing sufficiently erect to deserve the epithet of "tower-like," and they give one the idea of having been ejected in so soft a condition as to have sunk down instead of forming "towers;" otherwise they are very similar to the castings represented in Figs. 2 and 3 in Darwin's book. The night of my arrival it began to rain heavily; after the rain the worms were casting freely, the fresh castings being of a semi-fluid consistency, so that from the absence of tower-like castings it may be that they usually cast only during and just after wet weather As noted by Mr. Darwin in the case of other worms, the castings cohere with considerable tenacity on drying, and after heavy rain the old ones were only partially disintegrated thereby. In several places where logs had been burnt, the castings beneath and at the sides of them had been baked, but beyond a change of colour they were still perfectly recognisable as old castings. The worms must materially aid in the work of denudation, because there is not much level ground, and many of the slopes, on which castings may be found, are tolerably steep, so that eventually much of the soil brought to the surface by the worms must be washed down into the gullies.

Since earthworms are so abundant at Mt. Wilson it is not improbable that they are equally so in the soil of Mts. Tomah and Hay, which are not many miles distant, and which, as I understand, are similarly capped with basaltic rocks. If so, the comparison of the worms from these three spots may be of great interest, because practically these mountains have been completely isolated for ages, since the innumerable ravines and gullies which surround them may not unreasonably be supposed to form insuperable barriers to the passage of worms from one to the other, and the surrounding country is of such a barren and rocky character as to support few, if any, worms. On the other hand it may be that the volcanic outbursts at all three spots were contemporaneous, and that subsequently all three localities were stocked under similar circumstances, and from the same source, and were afterwards isolated by denudation, so that the worms having lived under very similar conditions may not be very different. (1)

I do not know for certain whether the rich soil of the Burrawang district forms a completely isolated tract, though on the map this appears to be the case, or whether it does not merge into that of Illawarra, and this again into some other; (2) but that of Mount Wilson certainly does. As the worms I have described seem more or less restricted to these fertile spots, which must have been stocked in the first instance from the then surrounding areas, possibly the existing worms are simply the well-grown and robust descendants of ancestors which long enjoyed a generous diet, and the surviving remnants of a once more widely spread worm-population whose limits have since been narrowed by the work of denudation, as much of the superficial area of the Blue Mountains, except perhaps in some of the gullies, is probably destitute of earthworms at the present time.

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(1) Similar remarks are applicable to Mt. King George. Speaking of this neighbourhood Strzelecki says:—"Between these ranges lie yawning chasms, deep winding gorges, and frightful precipices. Narrow, gloomy, and profound, these stupendous rents in the bosom of the earth are inclosed between gigantic walls of a sandstone rock, sometimes receding from, sometimes frightfully overhanging the dark bed of the ravine, and its black silent eddies, or its foaming torrents of water. Everywhere the descent into the deep recess is full of danger, and the issue almost impracticable. The writer of these pages, engulphed in the course of his researches, in the endless labyrinth of almost subterranean gullies of Mt. Hay and the River Grose, was not able to extricate himself and his men until after days of incessant fatigue, danger, and starvation." (Phys. Desc. of N.S.W. and Van Diemen's Land, p. 57.)

(2) On the Geological Sketch Map accompanying Mr. Wilkinson's "Notes on the Geology of N.S.W.," no large extent of volcanic rocks is shewn in this neighbourhood, but several *perfectly isolated* patches are marked as lying between the Railway and the coast. These, however, as regards their extent and limits, are probably only represented diagrammatically, the map being on too small a scale to allow of its being otherwise. I cannot identify any connection between Burrawang and either of the patches figured.

While Mr. Darwin has exhaustively treated the subject of the habits of European worms, so little is known from actual observation of the habits of any exotic earthworms in their native haunts, that I have, in the foregoing part of this paper, quoted rather copiously from my notes. In what follows my object is simply to describe intelligibly the worms I have collected, to do which it is necessary to take note of at least the more prominent anatomical characters; but for various reasons I have had to postpone the consideration of the details of the structure and arrangement of the segmental organs, of the salivary and intestinal (calciferous) glands, of the typhlosole, and of the nervous and vascular systems, as also of the situation of the nephridiopores, and of the relations of the vasa deferentia to the prostates in most cases. The parasites, which in various stages infest many, if not all, of these worms are also worth investigating. Too often those who have worked at the anatomy of foreign earthworms have had to be content with scanty supplies of badly preserved material. Having now obtained a general idea of some of our earthworms, I purpose endeavouring to make the most of my good fortune, by re-examining them and any others I can get, in detail from a morphological point of view, and with the help of section-cutting. As almost the whole of the material I have had for examination has been in spirit for more or less lengthy periods and was, with the exception of the Mt. Wilson worms which were obtained early in January, collected in winter when the worms are sexually inactive, I purpose collecting fresh supplies with a view to special preparation.

The rich districts of Illawarra, of the Hunter, the Manning, the Richmond, the Clarence, and others of our coastal rivers as well as other parts of the colony, will doubtless yield, when systematically searched, a rich harvest of earthworms, a knowledge of which and of their geographical distribution cannot fail to be of great interest from several points of view. As my time and opportunities for collecting material are limited, I appeal to members of this Society resident in favourable localities, for information of any description, or for specimens either put straight into good methylated spirit, or packed with due allowance of space in a tin box or wide bottle with a small amount of earth and plenty of damp moss.

Perrier (1) has divided earthworms into three groups, viz. *Lumbricini anteclitellini*, *L. intraclitellini*, and *L. postclitellini*, according as the male pores are situated in front of, within, or behind, the clitellum or girdle. It is interesting to find that there are Australian representatives of all three groups. Too little is known of Australian earthworms to attempt to generalise at present, but there are one or two points that may be noticed. The occurrence of the genus *Lumbricus* in Australia is interesting, because at present it is not known from Asia or the East Indies, though it occurs in N. and S. America, and at the Cape. On the other hand, there are indications that the genus *Perichæta*, which may be said to have its head-quarters in Asia and the East Indies, is well represented in Australia, while it is represented at present by a single species in S. America. Again the genus *Acanthodrilus* occurs both in New Caledonia and New Zealand, yet so far it has not been met with in Australia; this however, may be simply due to want of more careful search. Intraclitellian worms were first described by Perrier from S. America; subsequently several Asiatic genera were added to this group. The Australian intraclitellian worms described in this paper have no particular affinity with any of the described genera.

Among the points of interest presented by the worms which I have examined, the following is perhaps most noteworthy, though possibly some allowance must be made for the sexual inactivity of some of them: in all of them the vasa deferentia are quite independent of the testes (or seminal reservoirs in *L. Novæ-Hollandiæ*), and (except in the last named species) the two pairs of testes are either in consecutive segments (XI and XII), or two segments intervene between these, which are then in IX and XII, but in both cases the two pairs of "ciliated rosettes" or vas deferens

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(1) Nouv. Arch. du Mus. Paris, Tom. VIII, 1872, p. 43.

funnels are in segments x and xi. A similar condition has been described by Perrier as occurring in *Pontodrilus* and others, and by Beddard in *Acanthodrilus.*

In the following list the three described species are included.

A. *ANTECLITELLIAN WORMS.*

1. LUMBRICUS NOVÆ-HOLLANDIÆ, Kinberg.

Lumbricus Novæ-Hollandiæ, Annulata nova, Ofversigt af Kongl. Vet. Akad. Forhand. Stockholm, 1866, p. 95.

As there appears to be no copy of Kinberg's paper in the colony, and in neither of the abstracts available are the specific characters of the worm mentioned, all I can learn about it is, that Kinberg did describe a species of *Lumbricus* from Sydney. Professors Perrier and Lankester, however, both speak of Kinberg's descriptions as being insufficient being founded wholly on external characters, (1) the former writer also stating that Kinberg was unable to identify the male pores in the Australian *Lumbricus ;* hence a fuller description of it is both desirable and necessary.

The commonest species of earthworm about Sydney is a *Lumbricus* (or *Allobophora* of Eisen), and it appears to be widely distributed in this colony, for I have received specimens of it from Picton, from Wagga Wagga, and from Guntawang near Mudgee, and I have found it on the banks of the Turon River near Capertee, and at Seven Hills near Parramatta (2). There can be, I think, little doubt that this is the species to which the examples examined by Kinberg, belong, because I have not been able to meet with any other worms referable to this genus except from the Hon. W. Macleay's garden at Elizabeth Bay, one of the oldest-established gardens in Australia, and to which plants have been brought from many parts of the world. In this and in a neighbouring garden

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(1) Perrier loc. cit. p. 33, *and* Lankester Phil. Trans. Vol. 168, p. 265.

(2) Since the above was in type I have received specimens of this worm from Bowning near Yass, kindly sent to me by Mr. J. Mitchell.

originally part of it, there flourish apparently three *anteclitellian* worms, of which one is without doubt the European *L. olidus* introduced, a second is the worm alluded to above as being in all probability *L. Novæ-Hollandiæ,* from which the third differs in colour, and in the number of segments comprised by the clitellum, but seemingly not in other important points. I do not know at present what this last worm really is, but as its habitat is so restricted it may be left out of account for the present.

Large specimens of the worm which, from its abundance and wide distribution, it seems reasonable to suppose is *L. Novæ-Hollandiæ,* from Sydney gardens consist of from 130 to 150 segments, and are from about 115 to 145 mm. long when moderately contracted. Such worms are larger than any I have seen from any other locality. Colour varying from slate to light or dark brown above, usually darkest in front of clitellum, whitish below. Young specimens are redder and bleach white in spirits, whereas the larger ones retain their colour. Body cylindrical, flattened ventrally, tapering anteriorly, flattened posteriorly. Prostomium pear-shaped, with a median longitudinal groove inferiorly, embedded in the buccal segment for less than half the width of the latter. After about the fifth, the segments are tri-annulate.

Clitellum well-developed, comprising at least eight segments, from XXVII to XXXIV, but sometimes involving also portions of XXVI and XXXV; incomplete on the ventral surface of segments XXVII to XXIX, but more or less complete on the remaining portion, the outlines of the segments being usually quite obscured. Immature worms may be found with a rudimentary clitellum, commencing as ventral and infero-lateral thickenings of segments XXX to XXXIV, there being also two isolated thickened masses on segments XXXI and XXXIII just dorsad of the main thickening on each side. Later stages shew a complete clitellum for segments XXX to XXXIV, and finally in sexually mature worms all but the ventral surface of the three or three and a-half preceding segments is added.

Male pores slit-like, on segment XV, in the middle of the segment and between the second and third rows of setæ on each side; in mature specimens the pores have thick and tumid lips, the swellings often extending on to the two segments adjacent to XV. Female pores on XIV, in a line with the setæ and dorsad of those of the second rows. Apertures of spermathecæ between segments IX and X, and X and XI, in a line with the interval between the two outermost rows of setæ on each side. Dorsal pores intersegmental, present throughout after the 8th segment.

Ventral surface of segments IX-XI swollen, probably functioning as adhesive organs.

Setæ in eight longitudinal rows forming four pairs; the inner pairs ventral, the outer lateral and placed just where the change of colour takes place. Setæ simple, *ƒ*-shaped with a very slight enlargement near the middle; wanting on the first and last segments, present on the clitellum.

The alimentary canal presents no remarkable deviations from the Lumbricus type. The buccal cavity leads into a muscular pharynx extending as far back as segment V; this is followed by the long œsophagus which opens into the crop lying in segments XV and XVI; the large muscular gizzard occupies the next two segments, after which comes the large sacculated intestine which continues throughout the rest of the body. From segments VI to IX the œsophageal walls are thin, the contents showing through them, but in segment X and the two immediately following it, the walls become thicker, more glandular, and very vascular. In segment X the œsophagus gives off a pair of lateral diverticula, hollow vascular pouches with projecting rugæ, which, on slitting up the canal are seen to communicate with it by a pair of apertures. The diverticulata in segment X are always conspicuous; but in segments XI and XII there are apparently no distinct pouches, though the œsophagus being constricted at the mesenteries the intermediate portions of it in these segments externally appear swollen, while internally the portion in XI presents a number of very vascular, thick lamellæ, that in XII being much less modified. These are the calciferous glands; from this portion of the intestine, crystalline particles may be obtained, many of which effervesce on the addition of acid, those which do not being probably silicious grains of sand taken in with the food. In segments XIII and XIV the œsophageal walls are less glandular and thick. The septum between the two gizzard segments is usually wanting.

The supra-intestinal blood-vessel and the dorsal surface of the alimentary canal from the pharynx backwards but more conspicuously in the intestinal region, are coated, just as in European species, with the brownish-yellow issue formerly termed hepatic.

Of the male organs I am able at present to give only a preliminary and unsatisfactory account, as I have had for dissection only winter worms whose organs are in a functionally inactive condition; and it will be necessary for their complete understanding to dissect a more perfect series of animals in various stages of growth, than I have yet been able to do. The condition than I have met with in well-grown worms with fully developed clitella is as follows. In the 11th and 12th segments, when a worm is opened from the dorsal aspect, there are visible two pairs of conspicuous white masses lying above the intestine, those of each pair touching in the median line. But in addition to these, there are two other pairs of bodies of very similar appearance and structure, but of very much smaller size; so that in these worms, in the condition met with with, the vesiculæ seminales, or seminal reservoirs are of a fourfold character. The anterior pair of these lie in segment IX, and are attached to the anterior face of the mesentery between segments IX and X; the transverse "hearts" in this segment lie between them and the intestine, and the segmental organs lie in front of them. The second pair occupy a similar position in the 10th segment. The bodies of both pairs are quite separate from each other, smooth, somewhat flat or cylindrical, and not divided into lobes. The bodies in segments XI and XII are very much larger, slightly bi- or tri-lobed, with the surface not smooth but rather somewhat lobulate, and those of each pair apparently quite independent of each other, and attached by a stalk to the posterior faces of the mesenteries between segments X and XI, and

XI and XII respectively, slightly above, and to one side of the intestine, then arching over the latter they touch in the median dorsal line. Each pair, of which the posterior are sometimes the larger, lie in their own segment. Under the microscope portions of all these four pairs of bodies shewed in my specimens an abundance of various stages of parasites—Gregarines and *Anguillula*-like Nematoids—with a small quantity of spermatozoa in various stages of development.

Smaller worms from Wagga Wagga, Guntawang, and Sydney, but with well developed clitella show the same arrangement in a more marked degree, the two bodies of each pair in segments XI and XII, attached to the mesenteries a little above and to one side of, the intestine, being relatively so much smaller as to show at a glance their complete independence of each other, and of the "ciliated rosettes." The two anterior pairs were about as usual. Two worms with only rudimentary clitella shewed no perceptible difference. All these worms also were collected in winter; what changes may take place in the disposition of these organs when the worms are sexually active, I hope to find out in the ensuing spring, from the examination of a series of animals. The arrangement I have described is remarkable, and different from that of *Lumbricus agricola* and other European species, which have two pairs of seminal reservoirs in segments X and XI, those of the anterior pair bilobed and the posterior pair unilobed (1), the two pairs originating in immature worms as six small vascular outgrowths of three of the septa, arranged in three pairs, of which the two anterior pairs coalesce to form the bilobed mass met with in mature worms.

The two pairs of "ciliated rosettes"—or anterior dilated extremities of the vasa deferentia,—lie on the floor of segments X and XI, just in front of the posterior mesenteries of these segments. The first pair of "rosettes" thus lie below, and in the same segment as the second pair of bodies above-mentioned, and,

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(1) Bloomfield, Q. J. M. S. 1880.

are as it seems to me, quite independent of them; the second pair occupy a similar position in the following segment, and are also independent of the white masses in the same segment. Below the posterior white masses in segment XII, on the floor of the segment on either side, and close to the anterior mesentery is a small white body which on examination will be found to be a few coils of the vasa deferentia just before these pass through the mesentery between segments XI and XII to join the "ciliated rosettes" on the other side of it. The ducts from the four ciliated rosettes unite in segment XII and continue as the two vasa deferentia to open by the male pores on segment XV.

Attached to the posterior faces of the mesenteries between IX and X, X and XI, corresponding nearly with the position of the ovaries in XIII are two pairs of small but noticeable bodies consisting of masses, of cells which may be, and probably are the true testes. In European Lumbrics the true testes, occupy a similar position, and are invisible in sexually mature worms, being enclosed within the seminal reservoirs. In these worms also the "ciliated rosettes" are enclosed by the seminal reservoirs. In our *Lumbricus* in the condition I have met with them, they are free, as Perrier has described them to be in *L. americanus*, and in *L. Victoris*.

The female organs are much more like those in European species, and consist of, a pair of small pear-shaped ovaries attached low down to the anterior mesentery of segment XIII on either side of the nerve cord; a pair of oviducts commencing in segment XIII with dilated funnels having plicated margins, and, piercing the septum between segments XIII and XIV, opening to the exterior by the oviducal pores on the ventral surface of XIV; and two pairs of spermathecæ, 'small, globular, shortly stalked sacs, which, partially underlying the mesenteries between IX and X, and X and XI lie just within segments X and XI, and open to the exterior as previously mentioned. The spermathecæ of the winter specimens examined by me contained no spermatozoa.

The nervous and vascular systems call for no particular mention; there are seven pairs of transverse hearts in segments VI to XII, joining the supra- and sub-intestinal trunks.

The segmental organs are conspicuous, and consist of coiled, glandular, ciliated tubes of the usual Lumbricus type, and similarly disposed, namely a pair in each of the segments excepting a few of the most anterior ones. The external apertures of these organs are not discernible in the specimens I have examined, but in specimens of a worm from Mr. Macleay's garden differing from those described in colour and in the number of segments comprised by the clitellum, they are easily seen as a row of pores on each side, on the anterior margins of the segments, just dorsad of the second row of bristles on each side.

Hab. Sydney, Seven Hills near Parramatta, Picton, Wagga Wagga, Guntawang near Mudgee, Turon River near Capertee (2700 ft. above sea level), N. S. W.

Obs. This worm seems to prefer poor and medium soils. I have never found it either at Burrawang or Mt. Wilson, nor do I know whether it is found in any of the other colonies. The specimens from Wagga were from gardens, about drains, tanks, and damp places in paddocks; the Guntawang specimens were collected over a large extent of country, both from cultivated and from virgin soil, and from clayey flats on the banks of the Cudgegong River.

Of the two other anteclitellian worms which also occur in the Elizabeth Bay gardens, one has the characters of the European *L. olidus* as follows :—Prostomium pear-shaped, extending back on the buccal segment for about half its width, number of segments about 80, the lateral and dorsal portions of the middle of each segment a dark red, the anterior and posterior margins being yellowish or white, ventral surface white, clitellum of about six segments from XXV to XXX or XXXII, lighter in colour than the other portions of the body, male pores on XV, setæ in eight rows of four pairs. This worm is very partial to manure heaps, and emits an unpleasant fœtid odour. Mr. Masters informs me that birds will not knowingly touch it, and that, if by first feeding some tame curlews in his gardens with ordinary worms he beguiles them into taking one the fœtid worms, it is instantly rejected with evident disgust. The other *anteclitellian* worm has about the same dimensions as large examples of *L. Novæ-Hollandiæ*, but is of a pale flesh-colour, and has a saddle-shaped clitellum of about six segments from XXIX to XXXV, sometimes taking in about half of XXVIII and XXXVI, and incomplete below.

B. *INTRACLITELLIAN WORMS.*

NOTOSCOLEX, n. g.

Intraclitellian worms with clitellum comprising some or all of segments XIII-XXIII; male pores two, on segment XVIII, on papillæ in a line with the intervals between the inner couples of setæ; oviducal pores on XIV; setæ in eight longitudinal rows.

2. NOTOSCOLEX CAMDENENSIS, n. sp.

(Plate VIII, Figs. 1-5.)

A good spirit specimen (somewhat contracted) gave the following measurements.—Length 148 mm.; breadth (greatest) 9 mm.; length of pre-clitellar region 19 mm.; length of clitellum 15 mm.; number of segments about 220. This is a very good example of average good specimens. Such a worm when living and crawling will extend itself to 18 in. or 2 ft. Of two specimens measuring 102 mm. and 107 mm. respectively, and comprising each about 200 segments, neither shewed any trace of a clitellum. When alive these worms are of a uniform pale flesh-colour, except that, the integument being very thin, the internal organs shew through it and locally modify the ground colour.

The anterior portion of the body from somite XIII forward is cylindrical, tapering slightly anteriorly. Behind this, except in the caudal region, the body is perceptibly flatter in spirit specimens, but more nearly cylindrical when alive, and its breadth very gradually diminishes posteriorly; the last half-dozen somites more circular and rapidly decreasing in size; mouth and anus terminal.

Prostomium small, flattened from above downwards, wide as compared with its thickness, in spirit specimens hardly projecting beyond the buccal somite, marked inferiorly with one median and two lateral longitudinal grooves, with sometimes a second faint outer groove on each side; when everted the anterior extremity more convex, the grooves then curving upwards to the dorsal aspect, producing a ribbed appearance; the buccal segment only slightly notched, the prostomium extending back on it only for a about $\frac{1}{3}$ of its width.

Most of the segments from IV-XIII are wider than in any other part of the body; the fourth segment is faintly bi-annulate; the next nine are each divided by a well-marked groove into two principal annuli of which in segments VII to XIII the posterior ones are subdivided into two secondary annuli, and in segments IX-XIII the anterior annuli are similarly but not so completely subdivided; slight variations may be met with. Behind the clitellum the segments are narrower, and are either bi-annulate, or shew two grooves, one in front of, and one behind the setæ.

Clitellum thick and glandular, comprising ten segments from XIV to XXIII, but occasionally not taking in quite the whole of the first or last of these, complete except for a narrow portion on the median ventral line between the inner rows of setæ, but even here the surface of some of the anterior segments is slightly modified but never so much so as to obliterate the inter-segmental grooves as is the case on the rest of it. My specimens were collected in winter; when the worms are breeding probably the clitellum is even better developed.

Setæ simple, *ſ*-shaped with a slight enlargement nearly in the middle, on papillæ, arranged in eight longitudinal rows, of which the four inner rows are ventral in position and form two couples, one on either side of, and rather close to the median ventral line: the four outer rows form two couples and are lateral or ventro-lateral in position. The rows of setæ of each of the two outer couples are further apart from each other than are those of the inner ones; all the rows are plainly visible without a lens. Segments after the first setigerous.

Male pores two, situated on two slight papillæ probably more conspicuous in the breeding season, in a line with the intervals between the setæ of the two inner couples; the latter wanting on somite XVIII which bears the pores. In immature specimens also the two inner couples of setæ on this somite are wanting, and the ventral surface in the region of the male pores is thickened somewhat on each side of the median line. The apertures of the oviducts are on somite XIV, one on either side of and rather close to the median line, just behind the annular groove, in front of a line joining the setæ, and slightly ventrad of those of the two innermost rows. Spermathecal apertures between somites VII and VIII, and VIII and IX, their inner margins just about in a line with the innermost rows of setæ on each side Dorsal pores intersegmental, commencing after somite VIII and continuing throughout. Most of the mesenteries of segments VI to XIV are enormously thick and muscular, and there are strong interseptal ligaments.

The mouth leads into a buccal cavity, and this into the pharynx, which for the size of the worm is short reaching back to somite IV. The dorsal wall of the pharynx is especially thick and muscular. Following the pharynx is a piece of œsophagus which after somite V enters the large gizzard; the anterior division of this is thin-walled and hemispherical in shape, and perhaps may function as a crop; the posterior division is cylindrical, but tapering posteriorly, thick-walled and muscular. The whole of this structure lies between the two mesenteries of somite VI, but in the spirit specimens dissected, it pushed back the mesenteries between somites VI and VII, and VII and VIII, so as to lie in the first two and partly in the latter somite, the mesenteries mentioned closely over-lying one another and the gizzard. This is followed by the small intestine which in each of somites XIV to XVI is provided with a pair of kidney-shaped intestinal (calciferous) glands. (Figs. 1 and 2.) Each of the six reniform, stalked pouches is grooved transversely on its dorsal surface, a branch from the dorsal vessel running in the groove, and is attached to the intestine by a duct arising almost from the hilus. Their inner portions almost touch over the intestine, the dorsal vessel running below and between them; a more detailed account of the structure of these glands is postponed for the present. In somite XVII the intestine is still thin-walled and narrow, and in somite XVIII it dilates suddenly into a large intestine, which for a short distance in the first and last portions of its course is straight, sacculated, and constricted at the mesenteries, narrowing gradually towards the anus; the intermediate portion when distended and the worm is contracted appears to be of increased calibre, being closely coiled in a corkscrew fashion. The intestine is unprovided with cæca in any part of its course, and spirit specimens do not show the yellow so-called hepatic tissue present in Lumbricus.

Of generative organs there are firstly two pairs of minutely lobulated or racemose, solid, white bodies which are in all probability the true testes. One pair is in somite XI the other in XII, of which the posterior pair is the larger. The testes are attached by stalks and by ligaments to the posterior faces of the mesenteries between somites X and XI, and XI and XII, slightly above, and at each side of the intestine. The testis of each pair is separate from its fellow, merely touching, above and below, and arching round the intestine, so that when the worm is opened from above they are seen to overlie it. Secondly there are two vasa deferentia, which bifurcate in somite XIII, the four branches commencing anteriorly with complex, "ciliated rosettes," which receive the spermatozoa. The anterior pair of these lie just in front of the mesentery between somites X and XI, and therefore in somite X, while the posterior pair occupy a corresponding position in somite XI. That is to say the ciliated anterior dilatations of the vasa deferentia lie in the segments anterior to those containing the testes from which they receive the spermatozoa. A similar peculiar arrangement obtains in certain other earthworms, of which a case has recently been described by Beddard (1) in a species of *Acanthodrilus* from New Zealand; and it, or a variation of it, appears to be quite a common arrangement in Australian worms. Thirdly in somite XVIII is a pair of prostates, lobulated, small for the size of the worm, each with a short straight duct which is doubtless joined by the distal portion of the vas deferens on each side, but owing probably to the condition of the worms I have never been able to trace the exact connection between them; the common ducts open on the exterior of somite XVIII as previously mentioned. I have seen no trace of any penial setæ.

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(1) P.Z.S., 1885, p. 824.

The female portion of the generative organs comprises a pair of ovaries, a pair of oviducts, and two pairs of spermathecæ. The ovaries are to be found without any difficulty on each side of the nerve-cord, attached low down to the posterior surface of the mesentery between somites XII and XIII, and lying therefore in somite XIII. The oviducts commence by ciliated funnels on the anterior face of the mesentery between XIII and XIV, situated opposite the ovaries, and, passing through the mesentery, are continued as two short tubes which open to the exterior on the ventral surface of segment XIV. Of the spermathecæ there is a pair in each of somites VIII and IX. Each spermatheca is a long, narrow sac, the distal portion cylindrical when distended, insensibly diminishing towards the proximal portion which appears like a long duct, often bent like a hoop, on which, at some distance from the aperture, is a rudimentary cæcum, small, broad, with its summit marked with four little elevations so as to appear serrate in outline; the cæcum projects backwards. The spermathecæ often, if not usually, are folded inwards across the floor of the somite, one overlying the other, beneath the sub-intestinal vessel. They open anteriorly to the exterior by apertures of which one pair is between somites VII and VIII, and the other between VIII and IX.

The vascular system presents two principal trunks, one supra-intestinal and the other sub-intestinal. Transverse branches pass from these trunks to the adjacent organs. They are connected by eight pairs of "hearts" in somites VI to XIII. There appears to be no subneural vessel.

Segmental organs of the type met with in Lumbricus are absent. Attached to the cœlomic wall are small tufts of glandular tubes, most conspicuous in some of the anterior segments.

The nervous system calls at present for no special comment.

Hab. The rich soil of Burrawang in the county of Camden, N.S.W.; at present I know of no other locality.

3. NOTOSCOLEX GRANDIS, n. sp.

(Plate VIII, Fig. 6.)

In its external characters, leaving out of consideration the clitellum and the setæ, this worm looks at first sight very like a large edition of *N. Camdenensis*, the anterior segments being more completely divided and subdivided into annuli. These big worms are much less numerous, and in winter are so often devoid of a clitellum, that, before I had dissected any of them, I used to wonder whether they were not simply the aged and patriarchal forms of the preceding species, which had ceased to breed, but I found on dissection that the reproductive organs, though the testes are small both relatively and absolutely for the size of the worm, were not correspondingly atrophied. Though allied they are correctly referable to different species, the characteristic points of difference between them apart from the size, having to do with the clitellum, the setæ, the alimentary canal, the spermathecæ, and the more marked annulation of the most anterior segments.

It is somewhat difficult to extract these large worms from the ground without injury to them, hence some of my largest examples are in a fragmentary condition. A whole specimen preserved in good spirit measures—length 76 c.m., breadth 11 mm., length of preclitellar region 36 mm., length of clitellum 20 mm. Three softer specimens preserved in weaker spirit are less contracted, and measure from 76 to 106 c.m., (30 to 42 inches.)

The body is cylindrical, tapering very slightly anteriorly, more so posteriorly, both extremities rather obtuse. The prostomium small, flat, hardly projecting beyond the buccal segment, marked anteriorly and inferiorly with about five or more longitudinal grooves, not embedded in the buccal ring. Mouth and anus terminal. The segments are widest (some of them as from about VI to X 4 mm.), and most annulate in the region of about the anterior thirteen, where except for about the first five, the mesenteries are enormously thick and muscular: hence when excessively contracted this region is olive-shaped, and thicker than elsewhere. At first on account of the numerous zonitic markings the first fifteen or sixteen segments are somewhat difficult to count from external observation only. All these segments, except the first, are divided into two well-marked primary annuli; after the third segment they are further sub-divided into four secondary annuli; IX and the next few segments may shew slight traces of a further subdivision of the posterior annuli; still further back the segments shew less distinctly four annuli, but there are slight variations in different specimens.

The male pores are situated on two papillæ on segment XVIII, the papillæ dove-tailing in between the ends of two transverse, parallel, glandular ridges, one on the anterior ventral margin of XVIII, and the other in a similar position on XIX, but both extending some way on to the adjacent segments; usually there is a depression between the ridges, but sometimes this is absent, and the papillæ may more or less completely fuse with one or both ridges so as to give rise to a more or less complete glandular patch. One specimen 26 cm. long shows no ridges, and the pores are indistinct. In others these ridges appear to be the only trace of a clitellum, but in reality they are something superadded to it.

It is easy enough at Burrawang in winter time when my specimens were collected, to find worms of three species with well-developed clitella, and it is very exceptional to find adult specimens of them without this structure. It was therefore puzzling to find so many of the largest worms apparently without any clitellum except the ridges I have mentioned; but as Professor McCoy had described something similar in the Gippsland worm, I thought at the time that possibly the worms belonged to the same genus, as I had not then been able to investigate the matter. Having now gone carefully over the whole of my material I have found four specimens collected by myself, which shew an undoubted clitellum, still better shewn in two specimens collected for me in the spring. These specimens have a clitellum of six, or six and a-half segments, commencing with segment XIV or the posterior part of XIII, up to and including XIX. This region is differently coloured, has its surface modified, but the glandular development not so thick in all cases as to obscure the lines of demarcation between the segments, though in one specimen the clitellum is perfectly complete all round and so thick that it does do so. The ridges and pores are situated on the posterior ventral portion of the clitellum. (Fig. 6.) In these worms it appears then that when not actively breeding the clitellum is usually absent. The male pores being on segment XVIII, this species also is intraclitellian, and cannot be referred to McCoy's genus *Megascolides* as at present defined.

As in the other species the first four mesenteries are incomplete, while most of those from segments VI to XIII are excessively thick and strong, with strong interseptal ligaments; in worms at all contracted, they overlie one another like saucers, and nothing is seen in dissections of the contents of the anterior segments, until they are put aside. The presence of a few enormously thickened anterior mesenteries like these, prevails in all the other worms I have examined, except in our *Lumbricus*, and in *Didymogaster*, in both of which it is much less noticeable. A similar arrangement has been described in other worms, and, as Perrier suggests, it is probably of assistance to them in burrowing, especially where the ground is hard.

The setæ are quite inconspicuous even with a lens after removal of the cuticle, and I have not yet satisfactorily made out their arrangement, but from what I have seen I believe there are eight rows arranged as in the preceding species.

The male pores, as already mentioned, are on XVIII; the two pairs of spermathecal apertures are between segments VII and VIII, and VIII and IX; the two oviducal apertures are on XIV, one on either side of and rather close to median line, and not very conspicuous. The dorsal pores are intersegmental, and commence after about the 8th or 9th segment. Nephridiopores not discernible.

The alimentary canal is very similar to that of the previous species but with the following points of difference: the crop lies in segment V instead of VI, and the reniform stalked, intestinal glands in segments XIV to XVI are wanting, the portions of the canal in these segments being only thick-walled and swollen, glandular, vascular, but without diverticula; the large intestine begins in XVII.

The generative organs are also very similar: two pairs of racemose testes in segments XI and XII, attached to the anterior mesenteries, the only noticeable thing about them being that they were even absolutely somewhat the smaller in this species; two pairs of vas deferens funnels in segments X and XI, leading into a main vas deferens on either side which doubtless joins the prostatic duct of the same side, but in my specimens their relations could not be determined; two pairs of spermathecæ in segments VIII and IX, opening anteriorly, elongate, narrow, almost cylindrical sacs (about 7 mm. long and 1½ mm. wide), the diameter nearly uniform so that the duct is short, a protuberance or rudimentary cæcum given off anteriorly close to proximal end, the proximal portions not coiled, the sacs not folded inwards; a pair of ovaries in XIII; and two oviducts, having the same relations as in the smaller worm.

The vascular and nervous systems have not presented any conspicuous deviations from the smaller worms. Small tufts of glandular tubes coating the cœlomic wall, more conspicuously in the anterior region of the body, are probably the segmental organs.

Hab.—Burrawang, N.S.W.

4. DIDYMOGASTER SYLVATICUS, g. et sp. n.

(Plate IX, fig. 7 and 8.)

The worms thus designated when their form and general appearance, their habits, and certain structural characters are considered, differ so markedly from any other known Australian worms, as to necessitate, in my opinion, the creation of a new genus for their reception. These worms in respect of having the male pores on segment xviii, and in possessing eight rows of setæ and two gizzards, make some approach to Perrier's *Digaster*, but while the latter genus is *postclitellian*, the worms under consideration are *intraclitellian*. The more important generic characters, as far as one can judge from the consideration of a single species, are:—Clitellum of about five segments from xiii or xiv to xviii; male pores on xviii; female pores on xiv; eight rows of setæ; two gizzards.

This is the worm previously alluded to as usually living in and under rotten logs in the sassafras brush at Burrawang and at Springwood. It appears to thrive on a diet of rotten wood, though of course it at times must live in the earth before it gets into the rotten logs, and Mr. Wilkinson informs me that on one occasion he saw a number of them beneath an uprooted clump of ferns.

Colour when alive dark red almost plum-colour, lighter below; some spirit specimens retain the colour fairly well, others change to a bluish-grey. The segments of the clitellar region usually lighter, and of a purple hue. The integument is very thick, so that none of the vessels or organs show through it. Contracted spirit specimens are short, flat, and thick, and a transverse section of the body, except that it is flattened ventrally, would be elliptical in outline; the first few anterior and the last few posterior segments are more circular. Large specimens have a length of from 70 to 80 mm., a breadth of 10-12 mm., and a thickness of 8 to 9 mm., and comprise from 100 to 120 segments. The body is widest a little way behind the clitellum, tapering anteriorly and more gradually posteriorly. When alive and extended the body is more cylindrical and more tapering. When alive and very strongly contracted the body becomes of nearly uniform girth and obtusely rounded at both ends.

Prostomium small, rounded; buccal segment very slightly excavated, only for about $\frac{1}{3}$, or even less of its width.

The segments are very distinct, there being in some specimens but little indication of division into annuli; after about the 7th in others the segments are bi-annulate, and further back they may be even tri-annulate. In all my adult specimens (collected in winter) the only trace of the clitellum is the distinctly brighter colour and the slightly modified surface of segments XIV to XVIII, and sometimes of XIII except the ventral portion, but there is no thick glandular development, nor are the lines of demarcation between the segments at all obscured. Such examples have the papillæ and male pores conspicuous. Small immature worms are wholly without any trace of such modifications, and the papillæ and pores are scarcely noticeable. Three specimens in the Macleay Museum though somewhat bleached, shew five segments, XIV to XVIII, still further specialised so as to leave no doubt of the existence of a well developed clitellum during the breeding season; and in one of them the inter-segmental boundaries are all but obliterated, and the clitellum is complete all round except for the ventral portion of XVIII. In these specimens also XIII is slightly modified but is well marked off from the other segments. The slit-like male pores open on two conspicuous papillæ on XVIII, situated laterally on the anterior half of the ventral portion of the segment, the anterior basal portions of the papillæ extending slightly on to the preceding segment.

The setæ in some specimens are quite inconspicuous: but usually they are easily discernible in eight longitudinal rows, of which the inner three on each side are ventral and straight, while the outermost row on each side is lateral, and in all the specimens I have seen, sinuous. The second and third, and third and fourth about the same distance apart, and a little further distant than the first and second rows; the two innermost rows are about 3 mm. apart. The setæ are simple *ƒ*-shaped. The setigerous segments commence with the second.

The dorsal pores commence after segment V, and at first occur regularly; further back, however, they may be present only between every two or even three, segments.

The two oviducal pores are situated on segment XIV, one on each side of, and rather close to the median line; they are about

1·5 mm. apart while the male pores are about 4 mm. apart. The three pairs of spermathecal pores are peculiarly placed. There is a pair of spermathecæ in each of segments VII, VIII and IX: these open posteriorly on segments IX, X and XI respectively; that is to say, each spermatheca opens on the second segment after the one in which it is placed. The pores are slit-like, not inter-segmental but situated well within the anterior margins, or even just in front of the middle of their respective segments, and in a line with the intervals between the second and third rows of setæ. Nephridiopores not recognisable.

The mesenteries from segment XV forward are thicker than those which follow, but relatively are nothing like so thick as in the other worms.

The alimentary canal presents a muscular pharynx occupying about segments II to IV, a short œsophagus in segment V, which is followed by two globular gizzards, one in each of segments VI and VII; a narrow portion follows of which that in segments VIII and IX is thin-walled, but in segments X to XVI its walls become thick-walled, glandular, and vascular. The part in segment X is swollen and globular, less marked in XI to XIII, but there are no diverticula; in XIV there is a long piece thrown into a half-coil to the right so that the dorsal vessel crosses it transversely, a half coil to the left in XV, and another to the right in XVI. In XVII the walls are thinner, and the calibre of the canal suddenly increases, but for two-thirds of its course the noticeable breadth arises not from its being a broad sacculated canal, but because the thin-walled intestine, which is really of less diameter than at first sight appears, is coiled like a corkscrew, there being in contracted worms a half coil in each segment right and left alternately. For the remaining third it is straight and forms a rectum, which gradually decreases in breadth.

The male generative organs comprise two pairs of testes in segments IX and XII; two vasa deferentia which branch in segment XII and the anterior ciliated portions of which lie free in segments X and XI; and a pair of small prostates in segment

XVIII. The testes are smooth white bodies, which superiorly are drawn out into digitate processes tapering to fine points. The posterior testes are attached partly to the ventral wall, and partly to the posterior face of the mesentery between XI and XII. The anterior ones, the basal portions of which lie just behind the posterior spermathecæ, are attached partly to the ventral wall, and partly to the anterior face of the mesentery between IX and X; they are smaller and further apart than are those of the posterior pair. The anterior portions of the vasa deferentia are very much plicated. The prostates are flattened, almost completely divided transversely into two portions. The prostatic ducts are no doubt joined by the vasa deferentia, as is usual, but in none of the specimens dissected by me have I been able to see the actual connection; the common genital duct is excessively short.

The female organs comprise a pair of ovaries in the usual position in segment XIII; a pair of oviducts commencing in the same segment by ciliated funnels and opening on the ventral surface of the succeeding segment; and three pairs of somewhat rounded or pyriform spermathecæ, a pair in each of segments VII to IX, and of which the posterior pair are sometimes the larger. Each spermatheca has a small pyriform cæcum placed anteriorly and inferiorly, so as to be quite hidden until the spermatheca is turned back. The spermathecæ appear to be only very shortly pedunculated, but the ducts are really longer than at first sight appears, as they run for some distance in the body wall, and open to the exterior two segments behind those which contain the spermathecæ to which they belong.

The vascular system presents a supra-intestinal trunk which throughout its course is more or less completely double, the two constituent portions being confluent at, and for a short distance on either side of each of the septa, and which in segments VII to XIII is connected with the supra-nervian trunk by pairs of hearts, of which the last three or four pairs are especially large. Some of the "hearts" arise in part from a secondary longitudinal vessel which is noticeable in some of the segments commencing with x: of these peculiarities I reserve a fuller description until I have been able to make a further examination of them. There are the usual transverse branches from the main trunks to the intestine, &c. The double condition of the supra-intestinal trunk is not unlike what Beddard has met with in two species of Acanthodrilus from New Zealand.

The segmental organs are quite inconspicuous; probably the little glandular tufts attached to the cœlomic wall are these organs, but to make out their structure and relations requires more careful study than I have yet been able to give them. I have never been able to see any nephridiopores.

In each of the four segments v to ix or thereabouts is a pair of peculiar bodies, one lying on either side of the œsophagus, and both richly supplied with vessels; of the structure and relations of these I must also postpone the consideration.

Hab.—Burrawang, Springwood, Jervis Bay, N. S. W.

C. *POSTCLITELLIAN WORMS.*

DIGASTER, Perrier.

This genus comprises *postclitellian* worms with two gizzards and eight rows of setæ. Only one species has been described.

5. DIGASTER LUMBRICOIDES, Perrier.

Nouv. Arch. du Mus. Paris, VIII, 1872, p. 94, pl. I, fig. 24, pl. IV, figs. 64 and 65.

This species of which I have not yet seen examples, is characterised by the possession of two gizzards,—one in segment v the other in VII—eight rows of setæ, a clitellum of three segments (XIV-XVI), male pores on XVIII, two pairs of pear-shaped spermathecæ in segments VIII and IX, two pairs of racemose testes in x and XI, a pair of flattened prostates.

Perrier says of this worm that it is difficult at first sight not to confound it with an ordinary *Lumbricus*, whence the specific name, but his description of this species, probably from the indifferent material at his disposal is not so full and complete as that of most of the others in his most valuable paper. Moreover the description in the text differs somewhat from that in the explanation of the plate. Hence a further knowledge of this species is desirable.

Hab.—Port Macquarie, New Holland. (*Perrier.*)

Obs.—At Marrickville, near Sydney, under the same stone, I found three worms which are probably referable to Perrier's genus. They were all about the same size, 120 mm. long and 4 mm. broad (spirit specimens), but were evidently immature as not one of them shows the slightest trace of clitellum. On dissecting one of them I found it possessed two gizzards, one in v and one in vi, and it may possibly belong to this genus, though if so it differs in some respects from Perrier's species; but in the hope of obtaining fully developed specimens, I shall postpone a further account of it for the present.

PERICHÆTA, Schmarda.

This genus was founded by Schmarda for worms characterised by the possession of a complete circle or ring of setæ on each of the setigerous somites. The researches of Perrier and others have shewn that this, as *the* generic character of these forms, is insufficient. I have not been able to see several of Perrier's papers, but the amended characters of the genus as given by Beddard (1) are as follows: "setæ generally arranged in a continuous row round the middle of each segment; clitellum occupying 2, 3, or 4 segments (14-17). Male generative apertures paired, and situated upon 18th segment of the body, which is always *behind* the clitellum; genital papillæ occasionally developed in neighbouring segments. Female generative aperture single, and within the clitellum upon the 14th segment. Two pairs of testes, more or less solid and compact, in segments 11 and 12; terminal portion of vas deferens on either side connected with the duct of a large

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(1) Ann. Mag. Nat. Hist. Vol. XIII, (5), May 1884, p. 401.

prostate gland. Copulatory pouches varying in number from two to four pairs, and provided each with a variously shaped supplementary pouch or pouches. Intestine with a cæcum on either side in 26th segment"

No species of this genus has hitherto been described from Australia I believe, though in his description of *Megascolides*, Professor M'Coy incidentally mentions the occurrence of a perichæte worm in Gippsland, which he calls *P. Gippslandica*, but of which I have been unable to find any published description. Two new species are recorded in this paper, and in addition in the Macleay Museum there are specimens of at least two worms from Queensland, different from these, and probably differing from each other, which have uninterrupted rings of setæ.

6. PERICHÆTA AUSTRALIS, n. sp.

(Plate IX, figs. 9-11.)

A large Burrawang spirit specimen consisting of about 140 segments gave the following measurements: Length 144 mm.; breadth 9 mm.; length of preclitellar region 19 mm. A Mt. Wilson specimen has about the same dimensions. Body cylindrical, perceptibly constricted at the clitellum, region anterior to this olive-shaped; the last nine or ten somites decrease in circumference rapidly and successively. Colour from reddish to greenish brown above, very iridescent, much lighter below; old worms are much darker in colour than young ones, which are redder. The dorsal vessel shews conspicuously through the skin in the median dorsal line. Prostomium pyriform, with a longitudinal groove inferiorly, extends on to the buccal segment for about two-thirds of its width.

Clitellum distinct, comprising three somites—XIV to XVI; complete all round, not usually so thick as to obliterate entirely the intersegmental grooves; setæ and dorsal pores present on the clitellar segments.

Setæ simple, generally ∫-shaped, though from the region in front of clitellum they are straighter, thicker, with the projecting portion transversely striated: arranged on a transverse ridge in the middle of each segment, but not forming complete circles, these being interrupted in the median ventral and dorsal lines. These interruptions, of which the ventral is the more marked, are such as would be caused by the absence of one or two setæ from a complete circle, that is to say they are about two or more times the width of the interval between two of the setæ : they are usually more marked in the anterior part of the body : posteriorly the dorsal interruption often appears to be rather apparent than real by reason of there being no median dorsal row of setæ, and it is rendered more noticeable by the dorsal vessel showing through the integument of the interval between the first dorsal setæ on either side. The number of setæ per segment varies somewhat in different parts of the body, and also apparently according to the size of the specimen. In front of the clitellum there are 20 setæ to a segment ; just behind it 28 ; and in the caudal region 32 or 34 : or there may be 20, 32 and 36. Two specimens from Mt. Wilson gave 16, 30, and 34. The first, and the last few segments not setigerous.

Male pores two, each on a conspicuous mammillary elevation on segment XVIII, just in front of the line of setæ of this segment, corresponding with the interval between the second and third rows of setæ on each side ; no setæ apparent on that part of the segment between the papillæ. The pores themselves open on teat-like papillæ situated on basal eminences, like a mammary gland with its teat: no traces of penial setæ such as Beddard has described in *P. armata.* The apertures of the oviducts are two minute pores, one on each side of, and close to the median line, just in front of the line of the setæ. There are two pairs of spermathecal apertures, between somites VII and VIII, and VIII and IX ; they are in a line with about the sixth row of setæ on each side. (In Mt. Wilson specimens they almost correspond with the interval between the first and second rows on each side, but are nearer to the former). Dorsal pores intersegmental, present throughout after the fifth segment.

The buccal cavity leads into a muscular pharynx extending as far back as the 5th somite ; the short œsophagus leads to the gizzard in somite VI; after which follows the thin-walled small intestine, which in segments X to XII is provided with three pairs of intestinal glands, vascular pouches without stalks, not grooved dorsally. In somite XVI the large intestine commences, and continues as a wide, straight, sacculated tube throughout the rest of the body. It gives off no cæca in the 26th segment such as commonly occur in most species of this genus, nor in any other part of its course. Its walls are more or less coated externally with a layer of small yellowish masses in spirit specimens, which may perhaps be of a similar character to the so-called hepatic tissue of Lumbricus, though it does not also coat the dorsal vessel. There is no conspicuous typhlosole; I have not yet been able to cut sections.

Of testes there is a pair in each of segments IX and XII, that is to say two segments intervene between those which contain them. Each testis is a long, racemose, white body attached below and to the mesentery, broadest at its base, and tapering to a point, the distal portion being folded under: thus shortened those of each pair touch in the median line above the intestine. The testes of the posterior pair are the larger. Those of the anterior pair are attached below and to the anterior face of the mesentery between segments IX and X, their basal portions being just behind the two posterior spermathecæ. The posterior testes are attached below and to the posterior face of the mesentery between somites XI and XII. In each of the two intervening somites—X and XI—lies a pair of complexly plicated "ciliated rosettes." These lie on the ventral wall, on each side of the nerve cord, and just in front of the mesenteries separating somites X and XI, and XI and XII. They are large and conspicuous, but owing to their being squeezed through the contraction of the worms, and to being long in spirit, they are somewhat distorted, and it is difficult to make out their exact shape. The branches of the vas deferentia leading from these bodies join on each side in segment XII, and the two vasa then continue backwards on each side of the nerve cord to join the prostatic ducts rather close to their origins, and at the ends of the outer legs of the *U*-shaped bends. Very frequently on opening a worm two white flocculent masses are seen filling the whole upper portions of somites x and xi, quite obscuring what lies below. At first sight they look like two additional pairs of testes. Under the microscope they are seen to be masses of spermatozoa which have been probably dehisced into these segments from the two pairs of testes in somites ix and xii, and have been coagulated by the spirit. The masses do not seem to be enclosed in any membrane, and as soon as they are touched they break up into fragments. The ciliated anterior portions of the vasa deferentia crammed with spermatoza lie below these masses, the intestinal glands and the hearts lying above or partly in front of them, but they are free. Hence in this species there appear to be no vesiculæ seminales, the functions of such being here performed by the segmental cavities. The prostates, of which there is a pair lying in somites xviii and xix, one on each side, are flattened, white bodies, transversely divided into lobes. The two prostatic ducts arise from the inner side of the anterior ends, and, after a very short distance, are joined by the distal portions of the vasa deferentia; the common ducts, which are *U*-shaped with the bends turned forward and lying in somite xvii, increase in calibre, especially in the proximal portions, and may possibly function as penes, but I have not been able to find any penial setæ. In the one Mt. Wilson specimen dissected the *U*-shaped portions of the common ducts were turned backwards and the bends lay in xix. The two ovaries are large, flattened, situated in segment xiii, attached low down to the posterior face of the mesentery between somites xii and xiii. The oviducts commence by plicated funnels in xiii, situated opposite the ovaries, and open on the ventral surface of the next segment by two apertures instead of one, as is usual in other species of this genus. There are two pairs of spermathecæ,—a pair in each of segments viii and ix—and they open anteriorly. They are pear-shaped or rounded when distended, with short stalks, each of them having a cæcum as long as, but much narrow than itself, which lies in front of it, and opens into the duct near its orifice ; the free extremity of each cæcum dilated.

The supra- and sub-intestinal vascular trunks are joined in segments VI to XII by seven pairs of hearts, of which the last three pairs are largest, but in this species also there are some peculiarities about these organs which require further examination. Some of the anterior segments shew masses of glandular tufts which may be the segmental organs. The further consideration of these organs also is postponed. No nephridiopores discernible.

Hab.—Burrawang, Mt. Wilson (?), Sydney, N.S.W.

Obs.—Notwithstanding the presence of two oviducal apertures instead of a single one, and the absence of intestinal cæca, these worms possess so many important characters in common with other species of the genus *Perichæta*, that I have included them in it. A better knowledge of the Mt. Wilson worms may necessitate the making of a new and separate species for them, for, though they agree fairly well on the whole with Burrawang specimens, they still present several points of difference, as in the position of the spermathecal apertures, and of the bend of the genital duct, and possibly in other respects. As I have had only two specimens from Mt. Wilson, and only one of them for dissection, I prefer to consider them as a variety of the species, until I can study them more fully.

Sydney specimens are smaller and have fewer setæ, (one example 55 mm. long had about 24 setæ per segment) but have the same general characters in regard to the clitellum and internal organs. From Seven Hills, beyond Parramatta, I have recently obtained two worms similar in size and general appearance to Sydney specimens but differing among other respects in having four pairs of spermathecæ, some of which have excessively long cæca. I hope shortly to procure better examples of this worm, which may be the same as the third worm from Mt. Wilson, previously mentioned.

7. PERICHÆTA COXII, n. sp.

The commonest worm at Mount Wilson is, when looked at from above, in colour and general appearance, apart from the clitellum, more like *N. Camdenensis* than a perichæte worm, though a closer examination shews that it is provided with from 16 to 20 or more rows of setæ, which dorso-laterally are arranged somewhat irregularly. Nevertheless, from the consideration of its general characters, at any rate provisionally, it is here included in the genus *Perichæta.* The largest (spirit) specimen obtained measures 190 mm. in length, with a breadth of about 9 mm. in front and 7 mm. further back, but other specimens of nearly the same length are much less in diameter. Body cylindrical, often in spirit specimens contracted just in front of clitellum where the mesenteries are thin, and the intestine of small calibre; diameter greatest in the region in front of this where the mesenteries are thick; flattened somewhat ventrally, tapering very gradually posteriorly; the circumference of the last few segments decreases rapidly and successively, and the anus is situated either on a central eminence, or in the centre of a disc, according to the state of contraction.

Prostomium somewhat flattened, marked anteriorly and inferiorly with irregular grooves; extending back on the buccal segment for about ½ its width.

The segments of the posterior portion of the body are either free from zonitic markings, or, like those in the middle region have two, one in front of and one behind the ridge which carries the setæ. In the anterior region the number of annuli into which some of the segments are divided is rather difficult to make out at first sight. Segments II to IV are bi-annulate; after these they are either tri-annulate—the setæ being on the middle annulus, or in addition, as from about VII to XIII, the anterior and posterior annuli may again be less completely sub-divided, each into two, giving five annuli to a segment altogether. Many setæ are wanting in this region.

The clitellum comprises 4 or 4½ segments from XIV to XVII, or in addition the posterior half of XIII. It varies in the extent in to which it is developed, being sometimes very thick and complete all round, or incomplete on the ventral surface of about the last segment. A good-sized specimen 140 mm. long shews no trace of it. The male pores are on segment XVIII; their position is determinable on a first examination only by dissection, as there are three or four pairs of pores of accessory glands lying immediately in front of them, and three pairs just behind them, and there is but little in the appearance of any one pair of them to distinguish them particularly as the male pores. Of these accessory gland pores, which are just external to or about in line with the second rows of setæ on each side, the first pair are on XVI, the second and third pairs on XVII, and a pair on XVIII just in front of and external to the male pores, and on each of the three segments following it; sometimes there are even eight pairs of pores; and frequently there is one pore more on one side than on the other. The ventral portions of the annuli carrying the pores are slightly thickened, the pores being situated on slight elevations of these ("copulatory papillæ"). They are the apertures of glandular pouches whose bases are seen, when the worm is dissected, as successive pairs of hemispherical eminences situated on either side of the nerve cord, and beneath the prostates. Two specimens without clitella showed none.

The apertures of the oviducts are on XIV as in *P. australis*, but not quite so close to each other. The apertures of the spermathecæ are just behind the grooves between VII and VIII, and VIII and IX, and on the anterior margins of the two latter segments, just dorsad of the line of the innermost rows of setæ. Nephridiopores are quite indistinguishable in my specimens.

The setæ are simple *ſ*-shaped and in no way remarkable, though their arrangement is somewhat peculiar. Those of each segment are situated on a median ridge, not however so conspicuous as is usual in perichæte worms, nor do they form complete circles. The setæ are less conspicuous on the preclitellar segments. Behind these there is a median ventral region about 2 mm. wide in an ordinary specimen, devoid of setæ, and bounded on either side by a straight longitudinal row of them. External to each of these rows and at a distance of about 1 mm. from them is a parallel row. After these the remaining rows of which there are about 16 altogether, cease to preserve any regularity, becoming sinuous and with numerous gaps, so that the setæ on a segment are frequently at irregular intervals, and vary slightly in number on the various segments. The median dorsal region is devoid of setæ, and the rows of setæ which bound it are irregular and sinuous. The setæ do not regularly alternate from segment to segment. In the caudal region the rows are more numerous (about 30 in a large worm), and more regular but not perfectly so, and the dorsal and ventral interruptions are narrower but noticeable. The segments after the first are setigerous throughout. In front of the clitellum the setæ are fewer per segment, less conspicuous, and very irregular; the first two ventral rows on either side being the only regular ones.

Dorsal pores intersegmental, occur throughout after about the 13th segment. The mesenteries of segments VI to XIII are very thick and muscular, the first two and the last two of these less thick than the others, and are braced together by interseptal ligaments.

The muscular pharynx extends back to about III; the large gizzard the anterior portion of which is hemispherical, thin-walled and crop-like apparently lies in segments V, VI, and part of VII, but it is bounded posteriorly by the mesentery between V and VI, which is quite thin, and which behind is pushed backwards by the large gizzard; the small intestine continues as far as segment XVI, when it suddenly dilates and continues as the large sacculated intestine throughout the rest of the body, and is unprovided with cæca in any part of its course. The small intestine is provided with no less than six pairs of pouch-like diverticula—calciferous glands—a pair in each of segments VIII to XIII, and of which sometimes the last three pairs are the largest; they lie just in front of the mesenteries intervening between the segments containing them and the succeeding ones; they are not dorsally grooved as in *Notoscolex;* in slitting open this part of the intestine, the internal surface of it and of the glandular pouches is red, very vascular, and provided with rugæ; the apertures of the pouches are distinct; calcareous particles were not noticed.

Of generative organs there are firstly two pairs of testes, a pair in each of segments XI and XII. Each testis is a white, racemose body, independent of its fellow, those of each pair being attached to the anterior mesenteries of the segments in which they lie. Both pairs are of about the same size: they overlie the intestine, those of each pair touching in the median line. The anterior ciliated funnel-shaped portions of the vasa deferentia lie on either side of the nerve cord in segments X and XI, just in front of the mesentery which bounds each of these segments posteriorly. I have not been able yet to make out the posterior portions of the vasa deferentia, nor under what circumstances they join the prostatic ducts. The prostates are two long (7 mm.), and wide (4 mm.), flattened, lobulated bodies extending over about nine segments from XVIII or XIX to XXVIII, lying on either side of the intestine. The prostatic duct comes off from the anterior inner end of the gland, and is very long and much coiled. The prostates in this species are much larger, and the ducts longer and more coiled than in any other that I have examined. The two ovaries are in the usual position in segment XIII. The oviducts commence opposite these, and open to the exterior in the next segment. There are four spermathecæ, a pair in each of segments VIII and IX, opening anteriorly; they are pear-shaped with a rather long duct, which gives off a short and rudimentary cæcum, wider than high. The spermathecæ were distended with fully developed spermatozoa. The vascular system presents a dorsal trunk which is single, and in segments VI to XIII is connected with the sub-intestinal trunk by seven pairs of transverse "hearts," of which those in the last three or four of the segments containing the vascular intestinal pouches are the largest. The usual branches pass to the intestine, and anteriorly vessels are given off to the gizzard and pharynx, but the details require further examination. The segmental organs consist of tufted glandular masses, which are large, stalked, and dendriform in some of the most anterior segments, but smaller and inconspicuous elsewhere. A detailed account of these will be given later.

Hab.—Mt. Wilson only at present.

8. CRYPTODRILUS RUSTICUS, g. et sp. n.

One of the Burrawang worms is *postclitellian*, has eight rows of setæ arranged in a peculiar manner, has three or four pairs of accessory gland pores, two pairs in front of, and the others behind the male pores which are on segment XVIII, and one gizzard. It cannot therefore be referred to either of the genera *Acanthodrilus* or *Digaster*, and seems to belong to a new genus.

The best examples I have (spirit specimens) are about 190 mm. long; 6 to 7 mm. broad; have a clitellum about 8 mm. long; the length of preclitellar region short, only 13-15 mm.; and consist of about 250 somites. Among a number of Burrawang worms specimens (spirit) of this species attract one's attention by the very short preclitellar region as compared both with the clitellum and with the length of the body.

The body is cylindrical, rather obtuse at both extremities (in contracted spirit specimens). The prostomium is small, somewhat flattened, and in some specimens irregularly grooved anteriorly and inferiorly; embedded in the buccal segment for about ½ of its width. The anterior thirteen segments very distinct, widest from about VI-X, some of them faintly bi-annulate, or tri-annulate as they are further back. The clitellum which comprises about 4½ segments, extends from the posterior half of XIII up to and including XVII, is thick, glandular, and well developed; is complete all round except sometimes on the posterior ventral portion of about the last segment of it. On this is situated the anterior pair of accessory gland pores, which are not at first sight readily distinguishable by their appearance from the male pores. Sometimes all the pairs of pores are situated on little elliptical flat-topped eminences ("copulatory papillæ") in the enlargements of as many somewhat dumb-bell-shaped depressions, the outlines or rims of which are raised and tumid, of which the second one is on XVIII, and the others on the junctions of the two preceding and succeeding segments respectively. The first of these dumb-bell-shaped areas is partly on the last clitellar segment but involves the preceding segment, and just behind it is a little ridge carrying the setæ of the segment. The second is on the first post-clitellar segment (XVIII), carries a pair of pores and the male pores, and extends rather far back so that it partially involves the anterior portion of XIX. The last is on the junction of XIX and XX and involves both; or if there is a fourth it is on the junction of XX and XXI. One specimen had only the two anterior pairs of pores. Sometimes the portion representing the handle of the dumb-bell is wanting, and then the pores are situated in elliptical depressions or pits, which are a little longer (transversely) than the intervals between the inner rows of setæ and nearly correspond with them. The rows of setæ are visible on the clitellar segments.

The setæ are simple, *ƒ*-shaped, arranged in eight rows, not in pairs, of which four rows are ventral, two lateral, and two dorsal. The innermost rows on each side are about 3 mm. apart, and are about in a line with the inner side of the heads of the dumb-bell-shaped areas. The second rows on each side are about 1 mm. from the first rows. Dorsad of each of these at a distance of about 3 mm. (measured as in the other case with compasses), is the third row on each side. Dorsad again of each of these and at a distance of about 2 mm. is the outermost row on each side, so that these are quite dorsal in position, and measured across the back, are about 4 mm. apart, that is only about 1 mm. further apart than are the two innermost ventral rows from each other.

The two pairs of spermathecal apertures are inter-segmental, between VII and VIII, and VIII and IX, the pores of the anterior pair a little closer together, and ventrad of the innermost rows of setæ. There is a slit-like depression on XIV, on which probably the oviducts open. Male pores slit-like, not very conspicuous, situated on XVIII not on prominent papillæ. Nephridiopores not discernible. Dorsal pores throughout after about segment XIII, intersegmental.

Most of the mesenteries of segments VII to XIII are very thick and muscular, those of V, VI, XII, and XV less so, but in the case of the last two thicker than those which follow.

The alimentary canal comprises a short muscular pharynx, a short œsophagus, a large muscular gizzard in v, which pushes back the mesentery behind it so as to lie partly in vi ; the small intestine extends from vi to xvii, has no special vascular pouches, but especially in xiii or xiv to xvi presents globular swellings with thick vascular walls, internally provided with longitudinal rugæ ; the sacculated large intestine commences in xviii, continues to the end of the body, and is unprovided with cæca.

The genitalia include, two pairs of small racemose testes in segments ix and xii ; the posterior pair the larger, lying on each side of the intestine and attached to the posterior face of the mesentery between xi and xii ; those of the anterior pair further apart, just behind the posterior spermathecæ, attached partly to the anterior face of the mesentery between ix and x ; two vasa deferentia opening anteriorly with two pairs of ciliated rosettes lying free in x and xi, just in front of the posterior mesenteries of these segments ; a pair of prostates in xviii and part of xix, lobulated, with a short thick prostatic duct arising from the smaller lobe, not coiled, gradually increasing in calibre ; two pairs of spermathecæ in segments viii and ix, more or less pyriform, opening anteriorly by a short duct from which arise two or sometimes three short and rudimentary cæca ; a pair of ovaries in xiii in the usual position ; a pair of oviducts in xiv, passing through the mesentery between xiii and xiv opening anteriorly into the former by ciliated expanded mouths. I have been unable to determine under what circumstances the vasa deferentia join the prostatic ducts. The accessory glands appear as two or more white elevations lying on either side of the nerve cord, with the free portion of the prostate lying between them.

Segments vii to xii contain transverse hearts, the relations of which require further investigation.

The segmental organs consist of dendriform masses or tufts of glandular cæcal tubes. They are most conspicuous in the anterior segments as far back as about xviii, after which they are much less conspicuous. They are most noticeable along a line about 2 mm.

on each side of the nerve cord, and are very large in the first five segments. Probably owing to excessive contraction in my specimens their apertures are not visible on the exterior.

Hab.—Burrawang, N. S. W.

D. *WORMS "INCERTÆ SEDIS."*

9. MEGASCOLIDES AUSTRALIS, M'Coy.

Megascolides australis, M'Coy, Prod. Zool. of Vict. Decade I, 1878, p. 21, pl. 7.

The worms of this species are chiefly characterised as follows:—Body of from 350 to 500 segments, about 2 feet long when contracted and about 6 feet long when extended, setæ difficult to see, arranged in eight longitudinal rows of four pairs, clitellum incomplete, consisting of three short ventral bands between the 32nd, 33rd, and 34th segments, position of male and female genital pores undetermined.

From these characters it would appear as if these worms might be anteclitellian, but though this is a point which can only be settled by dissection, I venture to express the opinion that on further examination they will probably be found to be intraclitellian, and that the clitellum may be better developed in the breeding season.

Hab.—Gippsland, Victoria *(McCoy).*

In conclusion I have to thank several gentlemen for their kindness and help, or for specimens, among whom I am particularly indebted to my late colleague, Mr. R. T. Baker, for the first specimens of *Notoscolex grandis* I obtained, and for his kindness in making a number of careful drawings of various worms; to Mr. J. D. Cox for the opportunity of visiting Mt. Wilson; to Messrs. Garland, Hamilton, and Mitchell for specimens of *Lumbricus Novæ-Hollandiæ* from their respective localities; to Mr. Masters for the best specimens of *L. olidus* that I have seen; and to Mr. Haswell for the loan of several important papers, which I should otherwise have been unable to see.

EXPLANATION OF PLATES.

List of References.

ph.	pharynx	*t.*	testis,
œ.	œsophagus	*pr.*	prostrate
g.	gizzard	*v.d.*	vas deferens
i.	intestine	*c.r.*	ciliated rosette
i.g.	intestinal (calciferous) glands	*g.d.*	genital duct
cl.	clitellum	*sp.a.*	aperture of spermatheca
sp.	spermatheca	*m.p.*	male pores
c.	cæcum of spermatheca		

The numbers on the left of the figures indicate segments.

Plate VIII.

Fig. 1.—Anterior portion of the body of *Notoscolex Camdenensis* opened from the back, to shew the general relation of the alimentary canal, and a portion of the genitalia. Portions of some of the thick mesenteries are indicated, but the first four being incomplete should not have been shewn, this region being occupied by the pharyngeal muscles.

Fig. 2.—A pair of the kidney-shaped intestinal (calciferous) glands seen from the front.

Fig. 3.—A mesentery with a pair of testes attached to it.

Fig. 4.—A pair of spermathecæ displaced, and turned outwards.

Fig. 5.—Spermathecæ folded inwards in the natural position.

Fig. 6.—Anterior portion of *N. grandis*, seen from below, to shew the clitellum, ridges, and male pores. In this specimen the papillæ on which the pores open, are fused with the posterior ridge.

Plate IX.

Fig. 7.—Anterior portion of the body of *Didymogaster silvaticus,* seen from below. The position of the spermathecal pores on IX, X, and XI; of the oviducal apertures on XIV; of the male pores on XVIII; and of the setæ on some of the segments, is indicated.

Fig. 8.—Dissection of the anterior portion of the body from above, to shew the alimentary canal and part of the genitalia. The vas deferens is represented disgrammatically on one side, its exact relation with the prostrate being undeterminable in my specimens. (Twice the natural size.)

Fig. 9.—Dissection of portion of the anterior part of the body of *Perichæta australis,* to shew the arrangement of part of the genitalia. The left anterior testis, and the right posterior spermatheca have been omitted; and the cæca of the spermathecæ are turned forwards. *Note.*—As the testes are really attached to the thick mesenteries which are here omitted, it is difficult to represent them as they really are.

Fig. 10.—Spermatheca with its cæcum. (Enlarged).

Fig. 11.—Prostate with the genital duct. (Enlarged.)

NOTES ON THE DISTRIBUTION OF CERATELLA FUSCA, Gray.

By J. Brazier, C.M.Z.S.

A specimen of this Hydroid Zoophyte has been in the Australian Museum for a number of years placed with the Gorgonoid Corals. Only a few weeks ago when clearing out some of the cellar rooms in the Museum, Mr. Whitelegge found in some glass jars in spirits some very fine specimens, supposed to have been obtained in the trawl by employees of the Fisheries Commission of New South Wales. It does not appear, however, that any records of the trawling, dates, or depths have been recorded, and the only locality given "off Sydney Heads," is a wide term indeed.

Genus, CERATELLA, Gray, 1868.

Ceratella fusca, Gray.

Ceratella fusca, Gray, Proc. Zool. Soc. Nov. 26, 1868, p. 579, fig. 2; Carter, Ann. and Mag. of Nat. Hist. 4 series, Vol. XI. No. 61, Jan. 1873, pp. 8-10; Bale, Catalogue of Australian Hydroid Zoophytes, 1884, p. 48; von Lendenfeld, Proc. Linn. Soc. N.S.W., 1884, Vol. IX. p. 612.

Hab.—Head of Bondi Bay, N.S.W. (*J. E. Gray*); Wreck Bay south of Jervis Bay, N.S.W., found on the beach after S.E. gale (*J. Brazier*, 1870); Broughton Islands north of Port Jackson, 33-35 fathoms (*Australian Museum, Nov.* 1880); Port Jackson Heads (*Australian Museum, Sept.* 1879); off Port Jackson Heads (*N.S.W. Fisheries Commission*), no record of depth, specimens in *Australian Museum*; Bondi Bay, found in grass wrack after S.E. gale (*T. Whitelegge, May* 30, 1886).

The whole of the specimens are in a splendid state of preservation. A portion of the specimen obtained by Mr. Whitelegge in May, has been mounted by him for microscopical examination.

Dr. von Lendenfeld in his paper on the Australian Hydromedusæ (loc. cit. p. 612), is very curt when he says that Dr. Gray's description "is worthless." If the description is worthless the figure given by Gray is to the point in all that is required, for though this naturalist generally gave a short description of nearly everything he described, he always took care to give good figures.

Mr. H. J. Carter, F.R S., in his valuable paper on the Hydractiniidæ (loc. cit., p. 10), calls attention to the excellent illustrations given by Dr. Gray, and any scientist who has seen them cannot but acquiesce. When Dr. E. P. Ramsay was in London some two years ago, he obtained from the British Museum some Hydroids, named by the authorities of that Institution, and among them is a specimen of *Dehitella atrorubens*, Gray, Algoa Bay, with a reference name *Ceratella fusca*, Gray. This is undoubtedly *Dehitella atrorubens*, Gray, the Australian Museum never having received any specimen or specimens of *Ceratella fusca*, Gray, from the British Museum. The specimen so named is *Dehitella atrorubens*, Gray.

NOTES AND EXHIBITS.

Mr. Brazier exhibited specimens of *Ceratella fusca*, Gray, from N. S. Wales Coast, *Hydractinia echinata*, Fleming, from England, *Dehitella atrorubens*, Gray, from Algoa Bay, and *Chitina ericopsis*, Carter, from the Pacific.

Mr. Brazier also exhibited, for Mr. Deane, specimens of *Pecten tegula*, Wood, *Vola fumata*, Reeve, *Patella tramoserica*, Martyn, and a piece of wood, all obtained while sinking the cylinders for the railway bridge over the Parramatta River at Ryde, at a depth of from 30 to 40 feet below the bed of the river.

Mr. John Mitchell exhibited a very fine collection of Silurian fossils from Bowning, near Yass, including a number of Mollusca, and Trilobites (*Phacops*, *Harpes*, *Bronteus*, *Acidaspis*, *Encrinurus*, *Cromus*, *Sphœxochus* and *Calymene*); and specimens of Graptolites, probably undescribed, and certainly the first recorded from N.S.W., showing that the formations there which have hitherto been regarded as Devonian are in reality Silurian, underlying the strata in which the Devonian fossils, which had been supposed to determine the age of the whole, were found. Mr. Mitchell also exhibited fossil specimens of marsupial teeth and bones from the caves of Cave Flat, Murrumbidgee, these being the first specimens obtained from that locality.

Mr. Macdonnell exhibited a sample of Diatomaceous earth from Beechworth, Victoria, where it is found underlying a bed of peat, in such quantities as to form an article of export.

Mr. Smithurst exhibited specimens of the Betel Nut, and of implements and weapons made of ebony, or a quite similar timber, brought from New Guinea.

Mr. Pedley exhibited two skulls of Australian aboriginals—male and female—found in the neighbourhood of Sydney, and he described the way in which the remains occur in old middens, and the steps to be taken for collecting them from these places.

Mr. Masters exhibited a fine collection of Insects lately received from Cairns, Queensland, and collected by Mr. W. Froggatt. The Coleoptera were very numerous, and contained many new and rare things. Among the Diurnal Lepidoptera were some beautiful Pieridæ.

Mr. Macleay exhibited a very large specimen of a female *Tragoceras lepidopterus*, Schreibers, which had been cut out of a tree at Mount Victoria. Also the piece of wood from which the insect had been obtained. He said he would be glad to know the name of the tree, as a clue to the habits of the insect, which was the finest of our Longicorns, and extremely rare.

Mr. Whitelegge exhibited several microscopical slides of an Hydroid Zoophyte from Bondi Bay, which he identified as the *Ceratella fusca*, Gray. It is evident from the descriptions given by Bale, and also by Lendenfeld, that neither of them had seen the species, so that this is probably the first record of it since its description in 1868.

Mr. Fletcher exhibited specimens of the eight species of earthworms mentioned in his paper.

NOTICE.

Attention is hereby drawn to the following additional corrections be made in Vol. X, Part 4, of the Proceedings of this Society :—

Page 562, third line from above, *for* Raphyrus griffithsii *read* Raphyrus Griffithsii.

Page 564, fourth line from above, *for* pignut *read* pigment.

Page 565, second line from above, *for* Monagraph *read* Monograph.

Page 572, second line from below, *for* 1:20 *read* 1:250.

Page 573, in the description of Plate 41 *for* fig. 7 and fig. 8 *read* fig. 16 and fig. 17, respectively.

Page 573, in the description of Plate 40 *for* en profil *read* en face.

Pages 573 and 574, in the description of Plate 42 *for* figs. 9-16 *read* figs. 8-15, respectively ; and *for* fig. 17 *read* fig. 7.

Page 574, in the description of Plates 43 and 44 *for* figs. 18-21 *read* figs. 19-22, respectively.

In Plate 39, fig. 3 is not satisfactory, the ganglia cells not being sufficiently distinct.

In Plate 40, *for* 7 *read* 6, and in Plate 42 *for* 18 *read* 7.

From the Errata omit the references to pages 563 and 573.

WEDNESDAY, 28TH JULY, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

MEMBER ELECTED.

Mr. Hugh Pollock, B.A. (Dublin).

The President announced that the date of the next Monthly Excursion had been fixed for Saturday, 21st August, Members to meet at the Lagoon Bridge, Pittwater Road, Manly, at 10·30 a.m. Mr. Fletcher in charge.

DONATIONS.

"Australia. A Charcoal Sketch." By Frank Cowan. From the Author.

"Journal of the New York Microscopical Society." Vol. II, No. 3. From the Society.

"Bulletin of the Museum of Comparative Zoology at Harvard College." Vol. XII, No. 3, 1886. From the Director.

"Summary Report of the Operations of the Geological and Natural History Survey to 31st December 1885, being Part III, Annual Report of the Department of the Interior." From the Director, Geological and Natural History Survey of Canada.

"Supplemental Notes on the Palliobranchs of the Older Tertiary of Australia, and a description of a new species of Rhynchonella." "The Lamellibranchs of the Older Tertiary of Australia (Part 1.)"

"List of Australian Terebridæ." "The Fossil Terebridæ of Australia." "Additions to the Flora of extra-tropical S. Australia." "Miscellaneous Contributions to the Palæontology of the Older Tertiary Rocks of Australia." "Post-Miocene Climate in S. Australia (being in part a rejoinder to Mr. Scoular's paper.)" By Prof. Ralph Tate, F.G.S., F.L.S. From the Author.

"On the Intercentrum of the Terrestrial Vertebrata." "On the structure of the brain and auditory apparatus of a Theromorphous Reptile of the Permian Epoch." "Report on the Coal Deposits near Zacualtipan, in the State of Hidalgo, Mexico." By Prof. E. D. Cope. From the Author.

"Fourteenth Annual Report of the Board of Directors of the Zoological Society of Philadelphia." From the Society.

"Bolletino dei Musei di Zoologia ed Anatomia comparata della R. Università di Torino." Vol. I., Nos. 1-8. April, 1886. From the Director.

"Catalog II. der ethnologischen Sammlung der Neu Guinea Compagnie angestellt im Königl. Museum für Völkerkunde." "Ueber die ethnologischen Sammlungen aus der Südsee." "Die ethnologische Ausstellung der Neu Guinea Compagnie im Königl. Museum für Völkerkunde." By O. Finsch, Ph.D. From the Author.

"Royal Society of New South Wales. President's Address." 1886. By Prof. A. Liversidge, F.R.S. From the Author.

"Papers and Proceedings of the Royal Society of Van Diemen's Land." Vols. I.-III., 1849-1859. "Monthly Notices of Papers and Proceedings." 1865-1867, 1869, 1872; also Jan. and Feb., 1864; March-Nov., 1868; Sept.-Nov., 1873; June-Nov., 1874. "Papers and Proceedings and Report of the Royal Society of Tasmania." 1876-1881. Report for the years 1868, and 1873. From the Society.

"Victorian Naturalist." Vol. III., No. 3, July, 1886. From the Field Naturalists' Club of Victoria.

"Annales des K. K. Naturhistorischen Hofmuseums, Wien." Band I., No. 2, 1886. From the Director.

"Revue Coloniale Internationale." Tome II., No. 6, 1886. From l'Association Coloniale Néerlandaise à Amsterdam.

"Zoologischer Anzeiger." IX. Jahrg., Nos. 224, 225. From the Editor.

"Feuille des jeunes Naturalistes." No. 188, June, 1886. From the Editor.

"Results of Rain and River Observations made in N. S. Wales during 1885." "Local Variations and Vibrations of the Earth's Surface." "Anniversary Address" (delivered to the Royal Society of N. S. W., 6th May, 1885). By H. C. Russell, B.A., F.R.A.S. From the Author.

"Tijdschrift voor Entomologie uitgegeven door de Nederlandsche entomologische Vereeniging. Vol. XXVIII., Parts 3 and 4; Vol. XXIX., Parts 1 and 2, 1884 and 1885. From the Society.

"Journal of Conchology." Vol. V., No. 2. From the Conchological Society of Great Britain and Ireland.

"Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen." 3rd Series, Vol. I., Part 1, 1885. From the Academy.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CII., Nos. 15-19, 1886. "Table des Comptes Rendus." Premier Semestre, 1885, Tome C. From the Academy.

"Journal of the Royal Microscopical Society, London," Vol. VI., Part 3, June, 1886. From the Society.

"New Zealand. Preliminary Report on the Recent Volcanic Eruptions." By Dr. Hector. From the Author.

"Hints for Collecting Geological and Mineralogical Specimens." By F. Ratte. From the Trustees of the Australian Museum.

"The Australian Magazine." Vol. I., No. 1, July, 1886. From the Editor.

PAPERS READ.

NOTES FROM THE AUSTRALIAN MUSEUM.

ON SPECIMENS OF THE GENUS *XIPHASIA*, SWAINSON, FROM PORT JACKSON.

By E. P. Ramsay, LL.D., F.R.S.E., and J. Douglas-Ogilby.

The Australian Museum has recently received no less than three specimens of this rare fish, the first on April 7th through the Inspector of the New South Wales Fisheries, the second during the first week in May from Mr. Arthur Weigall, and the third on the 22nd of the current month: the last specimen, having been evidently disgorged by some other fish, was consequently worthless.

The genus *Xiphasia* was established by Swainson in 1839 for the reception of a fish described and figured by Russell under the name of "Tonkah Talawaree," the latter author having placed it in the genus *Ophidium*. In Swainson's system it was first placed next to *Ophidium*, but was subsequently removed to the neighbourhood of *Cepola*, with which latter family it has no affinities whatever. In 1858 Dr. Kaup described under the name of *Nemophis lessoni* two specimens obtained by MM. Lesson and Garnot during the Voyage of the Coquille, and therefore in all probability from the South Seas. Jerdon in 1851 obtained two examples, and from these a drawing was made by Sir W. Elliott, which is reproduced by Dr. Day, (Fishes of India, pl. 73), and is, with the exception of the elongate caudal ray, an accurate representation of our fish. Subsequently Dr. Günther in his catalogue formed the genus *Xiphogadus* for the reception of Russell's fish, though well aware that Swainson's genus was established on the same data: he however had taken previously a step in the right direction by placing *Nemophis* (Kaup) among the *Blenniidæ*.

Following up this clue Dr. Bleeker in 1863 proved conclusively from the examination of a specimen contained in the Leyden Museum, that the subject of this memoir is a Blennioid fish, or, as Dr. Day says "in fact a *Petroscirtes* with a tænioid or eel-like body;" the remarkable form of the dentition, and the size and position of the gill-openings are conclusive proofs of the correctness of this view. To the Zool. Rec. of 1868 Dr. Günther supplies a note, in which he recognises the identity of *Nemophis* with *Xiphasia*, or *Xiphogadus* as he prefers to call it, and appears to have come to the conclusion that there is probably but one species. If, however, Playfair's description (P.Z.S. 1868, p. 11) be correct, there are certain differences between his fish and ours, which would be sufficient to establish the specific rank of his example.

In view of the meagre descriptions of this curious form which are available to us, we have thought it advisable to give a full description of our fish taken from the recent examples above mentioned.

XIPHASIA SETIFER.

Ophidium tonkah-talawaree, Russell, Fish. Vizag. I., p. 28, pl XXXIX.

Xiphasia setifer, Swainson, Fishes, in Lardner's Cyclopædia II., pp. 179, 259, (1839); Day, Fishes of India, p. 336, pl. LXXIII., f. 1, (1878).

Xiphichthys russellii, Jerdon, M. J. L. & Sc., p. 139, (1851).

Xiphogadus setifer, Günth., Cat. IV., p. 374, (1862).

(?) Nemophis lessoni, Kaup, P. Z. S. 1858, p. 168; Günth., Cat. III., p. 296.

(?) Xiphogadus madagascariensis, Playf., P. Z. S. 1868, p. 11.

B. VI.; D. 128, 129; A. 116, 115; V. 3; P. 13; C. 12.

Length of head 16 in the total length; height of head $\frac{3}{7}$ to $\frac{2}{5}$ of its length; caudal fin about $\frac{1}{2}$ of the same. Orbit $3\frac{7}{10}$ in the length of head, equal to that of snout, and from $\frac{1}{2}$ to $\frac{3}{7}$ of a diameter apart. The upper profile of the head is rounded, and the upper jaw is slightly the longer when the mouth is closed. The mandible is armed with a single row of closely set recurved cardiform teeth with a greatly developed lateral canine on each side which fits into a groove in the roof of the mouth; the teeth are similar in size and number to those of the mandible, with the exception of the lateral canine, which is barely ⅓ of the size of that of the lower jaw. The dorsal fin commences above the anterior margin, and does not quite reach to the root of the caudal, though its posterior rays extend more than half its length, but are nowhere joined to it. The anal commences beneath the seventeenth dorsal ray, and extends to the root of the caudal fin, but is not joined to it by membrane; the rays of both fins are simple throughout their entire length. The other fins are but little developed. *Colors*, alternately dark and light ash, the dark bands being twice the width of the light, and being most defined at the margins. All the fins opaline, the dorsal with a black margin narrowly edged with white; the black margin however broadens out into distinct blotches on the anterior half of the fin.

We have received a fine example of *Gastrotokeus biaculeatus*, Bl., hitherto only recorded from North Australia, from Mr. C. S. Jarrett, who obtained it at Ballina, Richmond River; this species is hitherto unrecorded from N. S. Wales.

CATALOGUE OF THE DESCRIBED COLEOPTERA OF AUSTRALIA.

By George Masters.

Part V.

Family. CURCULIONIDÆ.

Sub-Family. BRACHYDERIDES.

EVAS. Pascoe.

4418 ACUMINATA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 183.
King George's Sound, W. Australia.

4419 ARGENTEIVENTRIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 183.
Queensland.

4420 CRASSIROSTRIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 183,
S. Australia.

4421 LINEATUS Pascoe, Ann. Nat. Hist. XI. 1873, p. 179.
Gayndah, Queensland.

PROSAULIUS. Schönherr.

4422 ATEROPTERUS Bohem. Schh. Gen. Curc. V. p. 842; Labr. et Imh. Gen. Curc. II. nr. 37.
Australia.

4423 COMOSUS Germ. Linn. Ent. III. 1848, p. 213.
S. Australia.

4424 DISPAR Germ. Linn. Ent. III. 1848, p. 213.
S. Australia.

4425 HOPEI Bohem. Schh. Gen. Curc. V. p. 841.
S. Australia.

EUTINOPHŒA. Pascoe.

4426 NANA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 182, t. 5, f. 6, a-b.
S. Australia.

RHADINOSOMUS. Schönherr.

4427 IMPRESSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 448.
W. Australia.

4428 LACORDAIREI Pascoe, Journ. Linn. Soc. X. 1870, p. 449; Lacord. Gen. Col. VI. 1863, p. 64.
N. S. Wales and Queensland.

EUTHYPHASIS. Pascoe.

4429 ACUTA Pascoe, Ann. Nat. Hist. (4), XVI. 1875, p. 57, t. 1, f. 3.
Swan River, W. Australia.

ACALANOMA. Pascoe.

4430 REDUCTA Pascoe, Ann. Nat. Hist. (4), XVI. 1875, p. 58, t. 1, f. 2.
Swan River, W. Australia.

OCHROMETA. Pascoe.

4431 AMŒNA Pascoe, Journ. Linn. Soc. X. 1870, p. 415, t 17, f. 6, a-c.
Champion Bay, W. Australia.

DERMATODES. Schönherr.

4432 AUSTRALIS Boisd. Voy. Astrol. 1835, p. 348; Dej. Cat. 3 ed. p. 273.
Australia.

LAODICE. Gemminger.

4433 FUNEBRIS Chev. Ann. Soc. Ent. Fr. 1880, p. CIII.
Darnley Island, Torres Straits.

PROSTOMUS. Schönherr.

4434 SCUTELLARIS Fabr. Mant. I. p. 815; Oliv. Ent. V. 83, p. 393, t. 12, f. 142; t. 19, f. 240; Boisd. Voy. Astrol. II. p. 343; Gyll. Schh. Gen. Curc. I. p. 504.
N. S. Wales.

STYREUS. Pascoe.

4435 GEONOMOIDES Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 413.
N. Australia.

PRYPNUS. Schönherr.

4436 CANALICULATUS Gyll. Schh. Gen. Curc. VI. (2), p. 232; Lacord. Gen. Col. VI, p. 137.
Victoria.

4437 FALLAX Gyll. Schh. Gen. Curc. VI. (2), p. 232.
Australia.

4438 QUINQUENODOSUS Gyll. Schh. Gen. Curc. I. p. 493.
N. S. Wales.

4439 SQUALIDUS Gyll. Schh. Gen. Curc. I. p. 505; Boisd. Voy. Astrol. II. p. 344; W. S. Macleay, Dej. Cat. 3 ed. p. 269.
Labr. et Imh. Gen. Curc. II. nr. 59.
bidentatus W. S. Macleay, Dej. Cat. 3 ed. p. 269.
N. S. Wales.

4440 SUBTUBERCULATUS Gyll. Schh. Gen. Curc. I. p. 494; Boisd. Voy. Astrol. II. p. 337.
Australia.

4441 TENEBRICOSUS Gyll. Schh. Gen. Curc. I. p. 344; W. S. Macleay, Dej. Cat. 3 ed. p. 269.
N. S. Wales.

4442 TRITUBERCULATUS Germ. Linn. Ent. III. 1848, p. 216.
S. Australia.

PACHYRRHYNCHUS. Germar.

4443 AUSTRALASIÆ Bohem. Res. Eugen. 1859, p. 119.
Australia.

Sub-Family. OTIORHYNCHIDES.

CELEUTHETES. Schönherr.

4444 ECHINATUS Fabr. Syst. El. II. p. 525.
Australis Boisd. Voy. Astrol. II. p. 398; Dej. Cat. 3 ed. p. 291; Gyll. Schh. Gen. Curc. II. p. 251.
paganus Gyll. Schh. Gen. Curc. II. p. 539.
Australia.

OTIORHYNCHUS. Germar.

4445 SULCATUS Fabr. Syst. Ent. p. 155; Rœlofs, C. R. Ent. Belg. XX. 1877, p. xxxv.
Port Adelaide and Tasmania. (Introduced.)

COPTORHYNCHUS. Guérin.

4446 GESTROI Pascoe, Ann. Mus. Civ. Genov. Ser. (2), Vol. II. 1885, p. 211.
Somerset, Cape York.

4447 JANSONI Pascoe, Ann. Nat. Hist. 1871, p. 90.
Lizard Island, N. E. Coast.

4448 LATERALIS Boisd. Voy. Astrol. II. p. 395; Lacord. Gen. Col. VI. 1863, p. 153, note 2; Dej. Cat. 3 ed. p. 294.
Australia.

4449 MELANCHOLICUS Boisd. Voy. Astrol. II. p. 396; d'Urville, Dej. Cat. 3 ed. p. 294.
Australia.

4450 SCABRATUS Oliv. Ent. V. 83, p. 373, t. 19, f. 244; Fabr. Syst. El. II. p. 522; Bohem. Schh. Gen. Curc. VII. (1), p. 245.
Australia.

PSOMELES, Guérin.

4451 OBLONGUS Blanch. Voy. Pole Sud, IV. p. 229, t. 15, f. 17.
Tasmania.

TYLODERES. Schönherr.

4452 SPINOSUS Boisd. Voy. Astrol. II. 1835, p. 403.
Australia.

MERIMNETES. Schönherr.

4453 TENUIS Germ. Linn. Ent. III. 1848, p. 220.
S. Australia.

4454 UNIFORMIS Bohem. Schh. Gen. Curc. VII. (1), p. 254.
Victoria.

EUPHALIA. Pascoe.

4455 PARDALIS Pascoe, Journ. Linn. Soc. X. 1870, p. 468, t. 19, f. 14, a-c.
W. Australia.

PROXYRUS. Pascoe.

4456 ABSTERSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 438, t. 17, f. 8, a-c.
Champion Bay, W. Australia.

4457 LECIDEOSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 438.
Champion Bay, W. Australia.

ATMESIA. Pascoe.

4458 GLAUCINA Pascoe, Journ. Linn. Soc. XI. 1873, p. 446.
W. Australia.

4459 MARGINATA Pascoe, Journ. Linn. Soc. X. 1870, p. 469, t. 18, f. 3, a-b.
Gawler, S. Australia.

TIMARETA. Pascoe.

4460 CRINITA Pascoe, Ann. Nat. Hist. XIII. 1874, p. 383.
Fremantle, W. Australia.

4461 FIGURATA Pascoe, Journ. Linn. Soc. XI. 1872, p. 446, t. 12, f. 8.
Fremantle, W. Australia.

4462 SATELLINA Pascoe, Journ. Linn. Soc. XI. 1872, p. 446.
Fremantle, W. Australia.

PHYLDA. Pascoe.

4463 PERITELOIDES Pascoe, Ent. Month. Mag. VI. 1869, p. 100, f. 1, a.
S. Australia

TITINIA. Pascoe.

4464 IGNARIA Pascoe, Ent. Month. Mag. VI. 1869, p. 101, f. 4, a.
Victoria.

4465 MARMORATA Pascoe, Ann. Nat. Hist. Feb. 1872, p. 132.
N. S. Wales.

IDASPORA. Pascoe.

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Gawler, S. Australia.

TELENICA. Pascoe.

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W. Australia.

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W. Australia.

EPHERINA. Pascoe.

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MYLLOCERUS. Schönherr.

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SYNOMUS. Pascoe.

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PLATYTRACHELUS. Schönherr.

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W. Australia.

MANDALOTUS. Erichson.

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Tasmania.

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OOPS. Germar.

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PEPHRICUS. Pascoe.

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SCOTASMUS. Schönherr.

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Australia.

LIPOTHYREA. Pascoe.

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CATASARCUS. Schönherr.

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ONESORUS. Pascoe.

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ESMELINA. Pascoe.

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LYSIZONE. Pascoe.

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APARETE. Pascoe.

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S. Australia.

POLYPHRADES. Schönherr.

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CHAODIUS, Pascoe.

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ESSOLITHNA. Pascoe.

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CHERRUS. Schönherr.

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Australia.

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N. S. Wales.

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N. S. Wales.

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rusticus Dej. Cat. 3 ed. p. 269.
N. S. Wales.

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RHYPAROPHILUS. Schönherr.

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STENOCORYNUS. Schönherr.

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LEPTOPS. Schönherr.

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W. Australia.

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BARYOPADUS. Pascoe.

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ZYMAUS. Pascoe.

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CATASTYGNUS. Pascoe.

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AMISALLUS. Schönherr.

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ETHEMAIA. Pascoe.

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Sub-Family. AMYCTERIDES.

PSALIDURA. Fischer.

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CUBICORRHYNCHUS. Lacordaire.

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POLYCRETA. Pascoe.

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HYBORRHYNCHUS. Macleay.

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MELANEGIS. Pascoe.

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EUOMUS. Schönherr.

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Australia.

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Australia.

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W. Australia.

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4897 STEPHENSI Gyll. Schh. Gen. Curc. II. p. 473; Boisd. Voy. Astrol. II. p. 388.
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TETRALOPHUS. Waterhouse.

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Australia.

ATYCHORIA. Pascoe.

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Australia.

DIALEPTOPUS. Pascoe.

4903 COLLARIS Bohem. Schh. Gen. Curc. VII. (1), p. 57; Lacord. Gen. Col. VI. 1863, p. 316, note 2.
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MYTHITES. Schönherr.

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Monaro, N. S. Wales.

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South and W. Australia.

MYOTROTUS. Pascoe.

4916 OBTUSUS Pascoe, Journ. Linn. Soc. XII. 1873, p. 22, t. 2, f. 5.
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AMORPHORRHINUS. Lacordaire.

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Swan River, W. Australia.

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S. Australia.

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W. Australia.

ÆDRIODES. Pascoe,

4920 FASTIGIATUS Pascoe, Ann. Nat. Hist. 1872, p 86, t. 1, f. 8.
K. G. Sound, W. Australia.

4921 INUUS Pascoe, Ann. Nat. Hist. 1872, p. 86.
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S. Australia.

BUBARIS. Pascoe.

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Mackenzie River.

ACHERRES, Pascoe.

4925 MAMILLATUS Pascoe, Ann. Nat. Hist. 1872, p. 87, t. 1, f. 5.
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ENNOTHUS. Pascoe.

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ALEXIRHEA. Pascoe.

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ODITESUS. Pascoe.

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K. G. Sound, W. Australia.

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K. G. Sound, W. Australia.

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K. G. Sound, W. Australia.

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K. G. Sound, W. Australia.

SOSYTELUS. Pascoe.

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N. S. Wales.

Sub-Family. SOMATODIDES.

BOTHYNORRHYNCHUS. Schönherr.

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Australia.

Sub-Family. HIPPORHINIDES.

HIPPORRHINUS. Schönherr.

4939 CLAVUS Fabr. Syst. Ent. p. 154; Oliv. Ent. V. 83, p. 392, t. 13, f. 172 ; Boisd. Voy. Astrol. II. p. 334.
Australia.

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Australia.

Sub-Family. RHYPAROSOMIDES.

ZEPHRYNE. Pascoe.

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Australia.

OPHRYOTA. Pascoe.

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DYSOSTINES. Pascoe.

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Sydney.

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Tasmania.

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Tasmania.

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Queensland.

Sub-Family. CYLINDRORHINIDES.

STERIPHUS. Erichson.

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Tasmania.

PANTOPŒUS. Schönherr.

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Australia.

PERIPAGIS. Pascoe.

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Australia.

LYCOSURA. Pascoe.

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Albany, K. G. Sound.

OCYNOMA. Pascoe.

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Swan River, W. Australia.

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DECIENUS. Pascoe.

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W. Australia.

PERPERUS. Schönherr.

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Australia.

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Gayndah, Queensland.

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Rockhampton, Queensland.

Sub-Family. MOLYTIDES.

PSALDUS. Pascoe.

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METHYPORA. Pascoe.

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OPSITTIS. Pascoe.

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K. G. Sound, W. Australia.

STEREMNIUS. Schönherr.

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Australia.

SYAGRIUS. Pascoe.

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Sub-Family. TANYRHYNCHIDES.

SYNATONYX. Wollaston.

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Australia.

XYNAEA. Pascoe.

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Australia.

Sub-Family. GONIPTERIDES.

OXYOPS. Schönherr.

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Rockhampton, Queensland.

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S. Australia.

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S. Australia.

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W. Australia.

5016 SUBNITIDUS Roel. (Acroteriasus), Ann. Soc. Belg. X. p. 245, t. 1, f. 2.
Australia.

BRYACHUS. Pascoe.

5017 SQUAMICOLLIS Pascoe, Journ. Linn. Soc. X. 1870, p. 479.
Queensland; S. and W. Australia.

5018 SUBFASCIATUS Jekel, in litt.; Lacord. Gen. Col. VI. 1863, p. 393, note 1; Pascoe, Journ. Linn. Soc. X. 1870, p. 479.
S. Australia.

GONIPTERUS. Schönherr.

5019 BALTEATUS Pascoe, Journ. Linn. Soc. X. 1870, p. 477.
Queensland.

5020 CINNAMOMEUS Pascoe, Journ. Linn. Soc. X. 1870, p. 477.
Queensland.

5021 CIONOIDES Pascoe, Journ. Linn. Soc. X. 1870. p. 478.
N. S. Wales.

5022 EXARATUS Fahrs. Schh. Gen. Curc. VI. (1), p. 462; Dej. Cat. 3 ed. p. 269; Blanch. Voy. Pole Sud, IV. p. 204, t. 14, f. 8.
Australia.

5023 FERRUGATUS Pascoe, Journ. Linn. Soc. X. 1870, p. 477.
Queensland.

5024 GIBBERUS Boisd. Voy. Astrol. II. p. 324; Dej. Cat. 3 ed. p. 269.
Australia.

5025 HYPEROIDES Pascoe, Ann. Nat. Hist. 1871, p. 96.
Queensland.

5026 LEPIDOTUS Gyll. Schh. Gen. Curc. I. p. 457; Boisd. Voy. Astrol. II. p. 323.
Australia.

5027 NOTOGRAPHUS Boisd. Voy. Astrol. II. p. 326; Latr. Dej. Cat. 3 ed. p. 269.
Australia.

5028 RETICULATUS Boisd. Voy. Astrol. II. p. 326; Latr. Dej. Cat. 3 ed, p. 269.
Australia.

5029 SCUTELLATUS Gyll. Schh. Gen. Curc. I. p. 458; Boisd. Voy. Astrol. II. p. 322.
Australia.

5030 SEPULCHRALIS Pascoe, Journ. Linn. Soc. X. 1870, p. 478.
S. Australia.

5031 SUTURALIS Gyll. Schh. Gen. Curc. I. p. 459; W. S. Macleay, Dej. Cat. 3 ed. p. 269; Boisd. Voy. Astrol. II. p. 325.
N. S. Wales.

5032 TURBIDUS Pascoe, Ann. Nat. Hist. 1871, p. 97.
Tasmania.

MINIA. Pascoe.

5033 OPALESCENS Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 415.
Clarence River, N. S. Wales.

Sub-Family. HYPERIDES.

HYPERA. Germar.

5034 ACACIÆ Pascoe, Ann. Nat. Hist. XI. 1873, p. 180.
Gayndah, Queensland.

PROPHÆSIA. Pascoe.

5035 ALBILATERA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 190.
S. Australia.

5036 CRETATA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 190.
S. Australia.

5037 CONFUSA Pascoe, Ann. Nat. Hist. XI. 1873, p. 180
Tasmania.

5038 FLOREA Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 415.
W. Australia.

EURYCHIRUS. Waterhouse.

5039 BITUBERCULATUS Waterh. Trans. Ent. Soc. Lond. 1853, p. 183.
Australia.

Sub-Family. DIABATHRARIIDES.

STRONGYLORRHINUS. Schönherr.

5040 OCHRACEUS Schh. Mant. sec. p. 66, (indscrpt.); Lacord. Gen. Col. VI. 1863, p. 410; Waterh. Trans. Ent. Soc. Lond. 1862, p. 227.
N. S. Wales; Victoria; S. Australia; Tasmania.

AROMAGIS. Pascoe.

5041 ECHINATA Pascoe, Journ. of Ent. II. p. 422, t. 17, f. 3,
N. S. Wales.

5042 HORRENS Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 416.
Victoria.

ATELICUS. Waterhouse.

5043 ABRUPTUS Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 379.
Tasmania.

5044 ATROPHUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 458.
Tasmania.

5045 CRASSIPES Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 380.
W. Australia.

5046 FERRUGINEUS Waterh. Trans. Ent. Soc. Lond. 1862, p. 230.
S. Australia.

5047 GUTTATUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 458.
Tasmania.

5048 INÆQUALIS Waterh. Trans. Ent. Soc. Lond. 1862, p. 229; Lacord. Gen. Atl. VII. t. 70, f. 2, a-c.
Tasmania.

5049 MINIATUS Pascoe, Ann. Nat. Hist. IX. 1872, p. 134.
Moreton Bay, Queensland.

Sub-Family. ATERPIDES.

RHINOPLETHES. Pascoe.

5050 FOVEATUS Pascoe, Journ. Linn. Soc. X. 1870, p. 469.
Warren River, W. Australia.

5051 IGNAVUS Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 417.
Champion Bay, W. Australia.

IPHISAXUS. Pascoe.

5052 ÆTHIOPS Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 416.
W. Australia.

5053 ASPER Pascoe, Journ. Linn. Soc. X. 1870, p. 470, t. 19, f. 7, a-b.
K. G. Sound, W. Australia.

ATERPUS. Schönherr.

5054 CULTRATUS Fabr. Syst. Ent. p. 153; Oliv. Ent. V. (83), p. 121, t. 13, f. 157; Gyll. Schh. Gen. Curc. II. p. 252; Blanch. Voy. Pole Sud, IV. p. 207, t. 14, f. 9.
bicristatus Fabr. Syst. El. II. p. 517.
Australia. (Widely distributed).

5055 GRISEATUS Pascoe, Ann. Nat. Hist. 1872, p. 134.
Queensland.

5056 HORRENS Gyll. Schh. Gen. Curc. II. p. 251; Boisd. Voy. Astrol. II. p. 354.
N. S. Wales.

5057 RUBUS Bohem. Schh. Gen. Curc. VI. (2), p. 128; Erichs. Wiegm. Arch. 1842, I. p. 187.
Tasmania.

5058 SCOPARIUS Erichs. Wiegm. Arch. 1842, I. p. 188.
Tasmania.

5059 SERIATUS Boisd. Voy. Astrol. II. p. 355.
Australia.

5060 TUBERCULATUS Gyll. Schh. Gen. Curc. II. p. 250; Dej. Cat. 3 ed. p. 282; Boisd. Voy. Astrol. II. p. 354.
N. S. Wales.

MYARDA. Pascoe.

5061 FERRUGATA Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 421.
Nicol Bay, W. Australia.

APARETE. Pascoe.

5062 PALPEBROSA Pascoe, Journ. Linn. Soc. 1871, p. 166.
S. Australia.

PELORORRHINUS. Schönherr.

5063 ANGUSTATUS Fahrs. Schh. Gen. Curc. VI. (2), p. 126.
N. S. Wales.

5064 ARGENTOSUS Gyll. Schh. Gen. Curc. II. p. 249; Boisd. Voy. Astrol. II. p. 353.
N. S. Wales.

5065 MARGARITACEUS Erichs. Wiegm. Arch. 1842, I, p. 188.
Tasmania.

5066 PUSIO Schh. Gen. Curc. VII. (2), p. 369; Blanch. Voy. Pole Sud, IV. p. 241, t. 14, f. 2; Lacord. Gen. Col. VI. 1863, p. 416, note 2.
variegatus Fahrs. Schh. Gen. Curc. VI. (2), p. 127.
Australia.

5067 SPARSUS Germ. Linn. Ent. III. 1848, p. 214.
S. Australia.

MEDICASTA. Pascoe.

5068 LEUCURA Pascoe, Journ. Linn. Soc. X. 1870, p. 442, t. 17, f. 11, a-d.
Champion Bay, W. Australia.

RHINARIA. Kirby.

5069 CALIGINOSA Pascoe, Ann. Nat. Hist. 1872, p. 135.
Bombala, N. S. Wales.

5070 CAVIROSTRIS Pascoe, Ann. Nat. Hist. XII. 1883, p. 418.
Queensland,

5071 COSTATA Erichs. Wiegm. Arch. 1842, (1), p. 198.
Tasmania.

5072 CRISTATA Kirby, Trans. Linn. Soc. XII. p. 431, t. 22, f. 9. a-d; Boisd. Voy. Astrol. II. p. 415.
N. S. Wales.

5073 DIVERSA Pascoe, Ann. Nat. Hist. (5), XII. 1883, p. 419.
W. Australia.

5074 EXCAVATA Boisd. Voy. Astrol. II. p. 417.
Australia.

5075 FACETA Pascoe, Journ. of Ent. II. 1865, p. 419.
Australia.

5076 FASCIATA Pascoe, Ann. Nat. Hist. XII. 1873, p. 278.
Australia. (Interior.)

5077 FOVEIPENNIS Pascoe, Ann. Nat. Hist. 1872, p. 135.
Bombala, N. S. Wales.

5078 GRANULOSA Fahrs. Schh. Gen. Curc. II. (2), p. 124.
Tasmania, Victoria, S. Australia, N. S. Wales.

5079 GRISEA Boisd. Voy. Astrol. II. p. 414.
Australia.

5080 MYRRHATA Pascoe, Ann. Nat. Hist. 1872, p. 136.
S. Australia.

5081 PERDIX Pascoe, Ann. Nat. Hist. XII. 1873, p. 278.
Victoria.

5082 RUGOSA Boisd. Voy. Astrol. II. p. 416; Dej. Cat. 3 ed. p. 306.
lopha Gyll. Schh. Gen. Curc. III. p. 482; Hope, Dej. Cat. 3 ed. p. 306.
N. S. Wales.

5083 SIGNIFERA Pascoe, Ann. Nat. Hist. 1883, p. 418.
Australia. (Interior,)

5084 STELLIO Pascoe, Journ. of Ent. II. 1865, p. 419.
W. Australia.

5085 TRANSVERSA Boisd. Voy. Astrol. II. p. 413.
Australia.

5086 VARIEGATA Boisd. Voy. Astrol. II. p. 411, t. 7, f. 10.
maculosa Fahrs. Schh. Gen. Curc. VI. (2), p. 125.
Australia.

ÆSIOTES. Pascoe.

5087 LEUCURUS Pascoe, Ann. Nat. Hist. XII. 1873, p. 278.
N. S. Wales.

5088 MOROSUS Pascoe, Ann. Nat. Hist. XII. 1873, p. 279.
Victoria.

5089 NOTABILIS Pascoe, Journ. of Ent. II. 1865, p. 422, t. 17, f. 16.
Pine Mountain, &c., Queensland.

Sub-Family. CLEONIDES.

LIXUS. Fabricius.

5090 BREWERI Pascoe, Ann. Nat. Hist. XIII. 1874, p. 384.
Albany, K. G. Sound.

5091 IMMUNDUS Bohem. Res. Eugen. 1859, p. 128.
N. S. Wales.

5092 MASTERSI Pascoe, Ann. Nat. Hist. XIII. 1874, p. 384.
N. S. Wales and Queensland.

Sub-Family. HYLOBIIDES.

CHRYSOLOPHUS. Schönherr.

5093 DETRITUS Chev. Pet. Nouv. II. 1879, p. 305.
Australia.

5094 SPECTABILIS Fabr. Syst. Ent. p. 155; Herbst. Käf. VI. p. 302, t. 95, f. 12; Bohem. Schh. Gen. Curc. II. p. 417.
Australia. (Widely distributed).

CURCULIO. Linné.

5095 GUTTATUS Bohem. Schh. Gen. Curc. II. p. 346.
Australia.

DEMYRSUS. Pascoe.

5096 MELEOIDES Pascoe, Ann. Nat. Hist. 1872, p. 136.
Sydney.

ALPHITOPIS. Pascoe.

5097 NIVEA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 191.
Champion Bay, K. G. Sound, &c., W. Australia.

CECHIDES. Pascoe.

5098 AMŒNUS Pascoe, Journ. Linn. Soc. XI. 1872, p. 453, t. 12. f. 7.
Champion Bay, W. Australia.

CYCOTIDA. Pascoe.

5099 LINEATA Pascoe, Journ. Linn. Soc. XI. 1872, p. 454, t. 12, f. 6.
Champion Bay, W. Australia.

LEXITHIA. Pascoe.

5100 RUFIPENNIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 192.
Australia.

ORTHORRHINUS. Schönherr.

5101 ÆTHIOPS Boisd. Voy. Astrol. p. 410; Schh. Gen. Curc. VII. p. 124.
Australia.

5102 ASPREDO Pascoe, Ann. Nat. Hist. (5), 1X. 1882, p. 380.
Queensland.

5103 CARBONARIUS Pascoe, Ann. Nat. Hist. IX. 1882, p. 381.
N. S. Wales.

5104 CARINATUS Pascoe, Ann. Nat. Hist. (4), XI. 1873, p. 181.
Wide Bay, Queensland.

5105 CYLINDRIROSTRIS Fabr. Syst. El. II. p. 463; Oliv. Ent. V. 83, p. 180, no. 158, t. 11, f. 128, t. 19, f. 128; Fabr. Ent. Syst. III. p. 426, no. 136; Mant. I. p. 105, no. 99; Spec. Ins. I. p. 174, no. 78; Syst. Ent. p. 137, no. 55; Herbst. Col. VI. p. 309, no. 283, t. 84, f. 7, ?; Oliv. Enc. Méth. V. p. 503, no. 150; Linn. Syst. Nat. Gmel. I. 1V. p. 1765, no. 240; Bohem. Schh. Gen. Curc. III. p. 245; Boisd. Voy. Astrol. II. p. 408.
innubus Herbst. Col. VI. p. 172, no. 133, t. 71, f. 15.
Australia. (Widely distributed.)

5106 EUCHROMUS Fairm. Ann. Ent. Belg. XXVII. (2), 1883, p. 36.
Somerset, Cape York.

5107 INFIDUS Pascoe, Ann. Nat. Hist. XI. 1873, p. 181.
Richmond River, N. S. Wales.

5108 KLUGI Bohem. Schh. Gen. Curc. III. p. 246.
Australia.

5109 LATERALIS Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 381.
Lord Howe, Island.

5110 LEPIDOTUS Erichs. Wiegm. Arch. 1842, I. p. 196; Bohem. Schh. Gen. Curc. VII. (2), p. 123.
Tasmania.

5111 LONGIMANUS Boisd. Voy. Astrol. II. p. 408.
Australia.

5112 MELEAGRIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 192.
Wide Bay, Queensland.

5113 PACIFICUS Erichs. Wiegm. Arch. 1842, I. p. 196.
Tasmania.

5114 PATRUELIS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 225.
Somerset, Cape York.

5115 POSTICUS Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 382.
Queensland.

5116 SIMULANS Bohem. Schh. Gen. Curc. III. p. 245.
Australia.

5117 SPILOTUS Bohem. Schh. Gen. Curc. III. p. 247.
rugirostris Bohem. Schh. Gen. Curc. III. p. 248; VII. (2), p. 124.
Australia.

5118 TENELLUS Pascoe, Ann. Nat. Hist. XI. 1873, p. 180.
Champion Bay, W. Australia.

EURHAMPHUS. Shukard.

5119 FASCICULATUS Shuk. The Ent. Mag. V. p. 506, t. 18.
N. S. Wales and Queensland.

Sub-Family. ERIRHINIDES.

AOPOLOCNEMIS. Schönherr.

5120 ALBO-GUTTATUS Chev. Pet. Nouv. II. 1879, p. 305.
Australia.

5121 DORSO-NOTATUS Chev. Pet. Nouv. II. 1879, p. 305.
Australia.

5122 FULVUS Chev. Pet. Nouv. II. 1879, p. 305.
Australia.

5123 GUTTIGER Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 383.
Victoria.

5124 LINEATA Pascoe, Ann. Nat. Hist. 1872, p. 92.
N. S. Wales. (Interior.)

5125 PHALERATUS Erichs. Wiegm. Arch. 1842, I. p. 197.
Tasmania, S. Australia and Victoria.

5126 RUFIPES Bohem. Schh. Gen. Curc. VIII. (2), p. 446.
N. S. Wales and Victoria.

5127 SEMICINCTUS Chev. Pet. Nouv. II. 1879, p. 305.
Australia.

5128 SUTURALIS Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 383.
Melbourne, Victoria.

DESIANTHA. Pascoe:

5129 CAUDATA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 194.
Victoria.

5130 SILACEA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 193.
S. Australia.

ERIRRHINUS. Schönherr.

5131 FERRUGATUS Bohem. Schh. Gen. Curc. VII. (2), p. 166.
Australia.

5132 LONGIROSTRIS Bohem. Res. Eugen. 1859, p. 129.
N. S. Wales.

CLISIS. Pascoe.

5133 MODESTA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 58.
K. G. Sound, W. Australia.

CYDMÆA. Pascoe.

5134 BIMACULATA Pascoe, Ann. Nat. Hist. 1872, p. 137.
Gawler, S. Australia.

5135 LUCTUOSA Pascoe, Ann. Nat. Hist. 1872, p. 137.
Gawler, S. Australia.

5136 NOTATICOLLIS Pascoe, Ann Nat. Hist. (4), XVI. 1875, p. 59.
Perth, W. Australia.

5137 PUSILLA Pascoe, Ann. Nat. Hist. 1872, p. 138.
Gawler, S. Australia.

5138 SELLIGERA Pascoe, Ann. Nat. Hist. (4), XVI. 1875, p. 59.
Champion Bay, W. Australia.

5139 VIRIDULA Pascoe, Ann. Nat. Hist. (4), XVI. 1875, p. 138.
Fremantle, W. Australia.

DIETHUSA. Pascoe.

5140 FERVIDA Pascoe, Ann. Nat. Hist. XI. 1873, p. 185.
S. Australia.

AGESTRA. Pascoe.

5141 RUBIGINEA Pascoe, Ann. Nat. Hist. (4), XVI. 1875, p. 59.
K. G. Sound, W. Australia.

5142 SUTURALIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 184.
Fremantle, W. Australia.

ENIOPEA. Pascoe.

5143 AMŒNA Pascoe, Ann. Nat. Hist. XI. 1873, p. 184.
Fremantle, W. Australia.

LYBÆBA. Pascoe.

5144 REPANDA Pascoe, Ann. Nat. Hist. XI. 1873, p. 187.
Albany, K. G. Sound.

5145 SUBFASCIATA Pascoe, Ann. Nat. Hist. XI. 1873, p. 186.
Albany, K. G. Sound.

BREXIUS. Pascoe.

5146 ANGUSTICOLLIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 201.
Queensland.

5147 DIVERSIPES Pascoe, Trans. Ent. Soc. Lond. 1870, p. 202.
Champion Bay, W. Australia.

5148 LINEATUS Pascoe, Ann. Nat. Hist. XI. 1873, p. 196.
Melbourne, Victoria.

5149 MURINUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 201, t. 5, f. 15, a-b.
Victoria.

NEMESTRA. Pascoe.

5150 INCERTA Pascoe, Journ. Linn. Soc. 1872, p. 445, t. 12, f. 5.
Fremantle, W. Australia.

5151 VIBRATA Pascoe, Ann. Nat. Hist. (5), IX. 1882, p. 382.
Swan River, W. Australia.

NEDYLEDA. Pascoe.

5152 SEMIUSTA Pascoe, Journ. Linn. Soc. 1872, p. 445, t. 12, f. 9; 1873, XII. p. 76.
W. Australia.

ENIDE. Pascoe.

5153 ÆSTUANS Pascoe, Ann. Nat. Hist. XI. 1873, p. 188.
Albany, King George's Sound.

5154 PORPHYREA Pascoe, Ann. Nat. Hist. 1873, p. 187.
Albany and Champion Bay, W. Australia.

5155 SANIOSA Pascoe, Ann. Nat. Hist. 1873, p. 188.
Fremantle, W. Australia.

ŒNOCHROMA. Pascoe.

5156 RUBETA Pascoe, Ann. Nat. Hist. X. 1872, p. 93, t. 1, f. 18.
Sydney.

MISOPHRYCE. Pascoe.

5157 HISPIDA Pascoe, Ann. Nat. Hist. X. 1873, p. 93.
S. Australia.

HEDYOPSIS. Pascoe.

5158 SELLIGERA Pascoe, Ann. Nat. Hist. XI. 1873, p. 189
Champion Bay, W. Australia.

CRYPTOPLUS. Erichson.

5159 PERDIX Erichs. Wiegm. Arch. 1842, I. p. 199.
Tasmania.

GERYNASSA. Pascoe.

5160 BASALIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 190.
Gawler, S. Australia.

5161 NODULOSA Pascoe, Ann. Nat. Hist. XI. 1873, p. 189.
South and West Australia.

METHONE. Pascoe.

5162 ORNATA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 60.
K. G. Sound, W. Australia.

DICOMADA. Pascoe.

5163 LITIGIOSA Pascoe, Ann. Nat. Hist. XI. 1873, p. 190.
Fremantle, W. Australia.

5164 MURINA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 60.
Champion Bay, W. Australia.

5165 OVALIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 191.
Albany, K. G. Sound.

5166 TERREA Pascoe, Ann. Nat. Hist. XI. 1873, p. 191.
Champion Bay, W. Australia.

EMPLESIS. Pascoe.

5167 FILIROSTRIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 185.
Champion Bay, W. Australia.

5168 LINEIGERA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 195.
N. S. Wales.

5169 SCOLOPAX Pascoe, Trans. Ent. Soc. Lond. 1870, p. 194.
S. Australia.

5170 SIMPLEX Pascoe, Trans. Ent. Soc. Lond. 1870, p. 195.
S. Australia.

5171 STOREOIDES Pascoe, Ann. Nat. Hist. XI. 1873, p. 185.
Champion Bay, W. Australia.

PARYZETA. Pascoe.

5172 MUSIVA Pascoe, Ann. Nat. Hist. XI. 1873, p. 192.
Champion Bay, W. Australia.

XEDA. Pascoe.

5173 AMPLIPENNIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 192.
Albany, K. G. Sound.

5174 BILINEATA Pascoe, Ann. Nat. Hist. XI. 1873, p. 192.
Champion Bay, W. Australia.

OLANÆA. Pascoe.

5175 NIGRICOLLIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 193.
Albany, K. G. Sound.

RHACHIODES. Schönherr.

5176 BICAUDATUS Boisd. (Myllorhinus), Voy. Astrol. II. 1835, p. 418.
spinicollis Gyll. Schh. Gen. Curc. III. p. 362; Lacord. Gen. Atl. VIII. t. 71, f. 2, a-b.
N. S. Wales, S. Australia, and Victoria.

5177 CONFORMIS Chev. Pet. Nouv. II. 1879, p. 309.
Swan River, W. Australia.

5178 DENTIFER Bohem. (Pteroporus), Schh. Gen. Curc. VII. (2), p. 126; Chev. Pet. Nouv. II. 1879, p. 309.
Tasmania and Victoria.

5179 GRANULIFER Chev. Pet. Nouv. II. 1879, p. 309.
Tasmania.

5180 MULTIDENTATUS Chev. Pet. Nouv. II. 1879, p. 309.
Tasmania.

5181 NIGRO-PUNCTATUS Chev. Pet. Nouv. II. 1879, p. 310.
Victoria.

5182 POSTICUS Chev. Pet. Nouv. II. 1879, p. 309.
Australia.

5183 SIGNATICOLLIS Chev. Pet. Nouv. II. 1879, p. 310.
Victoria.

STOREUS. Schönherr.

5184 SIGNATUS Bohem. Schh. Gen. Curc. VII. (2), p. 295.
Australia.

5185 VARIEGATUS Bohem. Schh. Gen. Curc. VII. (2), p. 294.
N. S. Wales.

ERYTENNA. Pascoe.

5186 CONSPUTA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 196, t. 5, f. 9, a.
S. Australia.

5187 DISPERSA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 196.
Nicol Bay, W. Australia.

ANTYLLIS. Pascoe.

5188 AURULENTA Pascoe, Ann. Nat. Hist. XI. 1873, p. 194.
Champion Bay, W. Australia.
5189 GRISEOLA Pascoe, Ann. Nat. Hist. XI. 1873, p. 194.
Albany, K. G. Sound
5190 SETOSA Pascoe, Ann. Nat. Hist. XI. 1873, p. 193.
S. Australia.
5191 TOGATA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 60.
Adelaide, S. Australia.

CYTTALIA. Pascoe.

5192 GRISEIPILA Pascoe, Ann. Nat. Hist. XI. 1873, p. 195.
Sydney.

MERIPHUS. Erichson.

5193 CORONATUS Pascoe, Ann. Nat. Hist. XI. 1873, p. 195.
W. Australia.
5194 FULLO Erichs. Wiegm. Arch. 1842, I. p. 200, t. 5, f. 2.
Tasmania.
5195 GUTTATUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 197.
Sydney.
5196 LONGIROSTRIS Pascoe, Ann. Nat. Hist. 1871, p. 97.
K. G. Sound, W. Australia.
5197 UMBRINUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 196, t. 5, f. 12, a-b.
Queensland.

ORPHA. Pascoe.

5198 FLAVICORNIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 197, t. 5. f. 11, a-c.
Champion Bay, W. Australia.
5199 PERSIMILIS Pascoe, Ann. Nat. Hist. 1872, p. 94.
Sydney.

GLAUCOPELA. Pascoe.

5200 UNICOLOR Pascoe, Ann. Nat. Hist. XIII. 1874, p. 385.
Champion Bay, W. Australia.

PHÆODICA. Pascoe.

5201 FULVICORNIS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 386.
W. Australia.

5202 SCUTELLARIS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 386.
Swan River, W. Australia.

EMPIRA. Pascoe.

5203 VARIEGATA Pascoe, Ann. Nat. Hist. XIII. 1874, p. 387.
Swan River, W. Australia.

TRECHIA. Pascoe.

5204 PYGMÆA Pascoe, Journ. Linn. Soc. XII. 1873, p. 25.
Champion Bay, W. Australia.

MYOSITTA. Pascoe.

5205 CIRRIFERA Pascoe, Trans. Ent. Soc. 1870, p. 198, t. 5, f. 4.
Queensland.

5206 MELANOCEPHALA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 198.
W. Australia.

5207 RUFULA Pascoe, Journ. of Ent. II. p. 418, t. 17, f. 23.
Australia.

5208 SUBLINEATA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 61.
Albany, King George's Sound.

5209 TABIDA Pascoe, Ann. Nat. Hist. 1871, p. 98.
S. Australia.

PHRENOZEMIA. Pascoe.

5210 LUNATA Pascoe, Ann. Nat. Hist. XI. 1873, p. 195.
Fremantle, W. Australia.

5211 LYPROIDES Pascoe, Ann. Nat. Hist. 1872, p. 95.
K. G. Sound. W. Australia.

Sub-Family. AMALACTIDES.

TRANES. Schönherr.

5212 INSULARIS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 387.
Lord Howe Island.

5213 INTERNATUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 199.
Queensland.

5214 MONOPTICUS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 199.
Queensland.

5215 SPARSUS Bohem. Schh. Gen. Curc. VII. (2), p. 131.
Australia.

5216 VIGORSI Bohem. Schh. Gen. Curc. VII. (2), p. 130 ; Lacord. Gen. Atl. VIII. t. 71, f. 4, a.
W. Australia.

IPHIPUS. Schönherr.

5217 ROEI Bohem. Schh. Gen. Curc. VII. (2) p. 127 ; Lacord. Gen. Col. VI. 1863, p. 509, note 1 ; Pascoe, Trans. Ent. Soc. Lond. 1870, p. 200.
Australia.

IXAMINE. Pascoe.

5218 ATOMARIA Pascoe, Trans. Ent. Soc. Lond. 1870, p. 200, t. 5, f. 3.
Champion Bay, W. Australia.

Sub-Family. BELIDES.

AGNESIOTIS, Pascoe.

5219 PILOSULA Pascoe, Journ. Linn. Soc. X. p. 474, t. 18, f. 6, a-b.
Queensland.

BELUS. Schönherr.

5220 ACICULARIS Pascoe, Journ. Linn. Soc. 1872, p. 457.
K. G. Sound, W. Australia.

5221 AMPLICOLLIS Jekel, Ins. Saund. II. 1860, p. 228.
Richmond River, N. S. Wales.

5222 ANGUINEUS Pascoe, Journ. Linn. Soc. 1872, p. 457.
Nicol Bay, W. Australia.

5223 ANGUSTULUS Germ. Linn. Ent. III. 1848, p. 206.
S. Australia.

5224 APTHOSUS Pascoe, Journ. Linn. Soc. 1872, p. 457.
S. Australia.

5225 BIDENTATUS Donov. Epitom. 1805, cum fig.; Boisd. Voy. Astrol. II. p. 303; W. S. Macleay, Dej. Cat. 3 ed. p. 262; Bohem. Schh. Gen. Curc. V. p. 349.
Australia. (Widely distributed).

5226 BIMACULATUS Pascoe, Ann. Nat. Hist. 1871, p. 99.
Tasmania.

5227 BISPINOSUS Perroud, Ann. Soc. Linn. Lyon, ser. 2, I. 1853, p. 410.
N. S. Wales.

5228 BRUNNEUS Guér. Voy. Coquille, 1830, p. 108; Boisd. Voy. Astrol. II. p. 305.

melanocephalus Bohem. Schh. Gen. Curc. V. 351; Germ. Linn. Ent. III. p. 208; Labr. et Imh. Gen. Curc. II. nr. 5.

var. *affinis* Perroud, Ann. Soc. Linn. Lyon, 1853, p. 414.
Australia.

5229 CENTRALIS Pascoe, Ann. Nat. Hist. 1872, p. 95, t. 1, f. 4.
S. Australia, Victoria, and N. S. Wales.

5230 CONGESTUS Pascoe, Ann. Nat. Hist. 1871, p. 98.
Wide Bay, Queensland.

5231 CYANEIPENNIS Bohem. Res. Eugen. 1859, p. 118.
N. S. Wales.

5232 DIVISUS Pascoe, Ann. Mus. Civ. Genov. ser. 2, Vol. II. 1885, p. 299.
Somerset, Cape York.

5233 FARINARIUS Pascoe, Journ. Linn. Soc. XI. 1872, p. 458.
W. Australia.

5234 FILIFORMIS Germ. Linn. Ent. III. 1848, p. 207.
S. Australia.

5235 FILUM Jekel, Ins. Saund. II. p. 231.
N. S. Wales.

5236 FUMIGATUS Germ. Linn. Ent. III. p. 208.
S. Australia.

5237 GANGLIONICUS Pascoe, Ann. Nat. Hist. XII 1873, p. 280.
Willoughby Falls, near Sydney.

5238 GRACILIS Bohem. Res. Eugen. p. 118.
N. S. Wales.

5239 GRAYI Jekel, Ins. Saund. II. p. 234.
Tasmania.

5240 HEMISTICTUS Germ. Linn. Ent. III. p. 204.
S. Australia.

5241 IRRORATUS Jekel, Ins. Saund. II. p. 232.
Tasmania.

5242 LINEARIS Pascoe, Journ. Linn. Soc. X. 1870, p. 475.
Queensland.

5243 PARALLELUS Pascoe, Journ. Linn. Soc. 1872, p. 458, t. 12, f. 10.
Champion Bay, W. Australia.

5244 PHŒNICOPTERUS Germ. Linn. Ent. III. p. 207.
S. Australia.

5245 PICA Jekel, Ins. Saund. II. p. 230.
Richmond River, N. S. Wales.

5246 PLAGIATUS Pascoe, Journ. Linn. Soc. X. 1870, p. 475.
Wide Bay, Queensland.

5247 RHINOTIOIDES Hope, Trans. Zool. Soc. I. p. 102, t. 14, f. 6; Schh. Gen. Curc. V. p. 353.
Victoria.

5248 SCALARIS Germ. Linn. Ent. III. p. 205.
S. Australia.

5249 SEMIPUNCTATUS Fabr. Syst. Ent. p. 135; Oliv. Ent. V. 83, p. 241, t. 12, f. 141; Bohem. Schh. Gen. Curc. V. p. 348;
lineatus Donov. Epitom. 1805, cum fig.
N. S. Wales and Victoria.

5250 SERPENS Pascoe, Journ. Linn. Soc. X. 1870, p. 475.
Champion Bay, W. Australia.

5251 SPARSUS Germ. Linn. Ent. III. p. 206.
S. Australia.

5252 SUBPARALLELUS Jekel, Ins. Saund. II. 1860, p. 229.
Richmond River, N. S. Wales.

5253 SUTURALIS Boisd. Voy. Astrol. II. p. 304, t. 7, f. 20-21; Germ. Linn. Ent. III. p. 205; Labr. et Imh. Gen. Curc. II. nr. 5.
Australia. (Widely distributed).

5254 VETUSTUS Pascoe, Trans. Ent. Soc. 1870, p. 203.
Champion Bay, W. Australia.

PACHYURA. Hope.

5255 AUSTRALIS Hope, Trans. Zool. Soc. I. (2), 1833, p. 102; Bohem. Schh. Gen. Curc. V. p. 352; Pascoe, Ann. Nat. Hist. XII. 1873, p. 280.
Australia.

5256 CINEREA Blanch. (Pachyura), Voy. Pole Sud, IV. 1853, p. 200, t. 13, f. 7; Pascoe, Ann. Nat. Hist. XII. 1873, p. 280.
Tasmania.

5257 VESTITA Pascoe, Ann. Nat. Hist. XII. 1873, p. 279.
Murrurrundi, N. S. Wales.

ISACANTHA. Hope.

5258 EXIGUA Pascoe, Ann. Nat. Hist. XII. 1873, p. 280.
Gayndah, Queensland.

5259 PAPULOSA Pascoe, (Pachyura), Ann. Nat. Hist. 1871, p. 99; Ann. Nat. Hist. XII. 1873, p. 280.
N. S. Wales.

CYROTYPHUS. Pascoe.

5260 FASCICULARIS Pascoe, Journ. Linn. Soc. X. p. 445, t. 17, f. 5, a-c.
Gawler, S. Australia.

RHINOTIA. Kirby.

5261 CORALLINA Pascoe, Journ. Linn. Soc. XI. 1872, p. 458.
Nicol Bay, W. Australia.

5262 CRUENTA Pascoe, Journ. Linn. Soc. X. 1870, p. 475.
W. Australia.

5263 DERMESTIVENTRIS Boisd. Voy. Astrol. II. p. 301; Blanch. Voy. Pole Sud, IV. p. 198.
fascicularis Hombr. et Jacq. t. 13, f. 6.
Australia.

5264 ELYTRURA Pascoe, Ann. Nat. Hist. 1872, p. 138.
Wide Bay, Queensland.

5265 HŒMOPTERA Kirby, Trans. Linn. Soc. XII. p. 427, t. 22, f. 7, a-d; Gyll. Schh. Gen. Curc. I. p. 244.
Australia (widely distributed).

5266 KIRBYI Bohem. Schh. Gen. Curc. V. p. 357.
Australia.

5267 MARGINELLA Bohem. Schh. Gen. Curc. V. p. 356.
Hunter River, N. S. Wales.

5268 PECTORALIS Erichs. Wiegm. Arch. 1842, I. p. 185.
Tasmania.

5269 PRUINOSA Pascoe, Ann. Nat. Hist. 1871, p. 98.
S. Australia.

5270 SPINIPENNIS Lacord. Gen. Col. VI. 1863, p. 526, note 1.
Australia.

5271 VENUSTA Pascoe, Ann. Nat. Hist. 1872, p. 139.
Gayndah, Rockhampton, &c., Queensland.

Sub-Family. EURHYNCHIDES.

CTENAPHIDES. Pascoe.

5272 PORCELLUS Pascoe, Journ. Linn. Soc. X. p. 477, t. 18, f. 10, a.
Champion Bay, K. G. Sound, &c., W. Australia.

EURHYNCHUS. Schönherr.

5273 ACANTHOPTERUS Boisd. Voy. Astrol. II. p. 308, t. 7, f. 17;
tetracanthus Bohem. Schh. Gen. Curc. V. p. 363; Lacord. Gen. Atl. VIII. t. 72, f. 4, a.
N. S. Wales and Victoria.

5274 BELLICOSUS Bohem. Res. Eugen. 1859, p. 119.
N. S. Wales.

5275 FULVOFASCIATUS Blanch. Ann. Sci. Nat. (3), X. p. 143.
Australia.

5276 LÆVIOR Kirby, Trans. Linn. Soc. XII p. 429; Gyll. Schh. Gen. Curc. I. p. 248.
N. S. Wales.

5277 MACULATUS Pascoe, Ann. Nat. Hist. XII. 1873, p. 281.
Swan River, W. Australia.

5278 MURICATUS Kirby, Trans. Linn. Soc. XII. p. 468; Boisd. Voy. Astrol. II. p. 308; Bohem. Schh. Gen. Curc. VIII. (2), p. 367.
N. S. Wales.

5279 QUADRIDENS Erichs. Wiegm. Arch. 1842, I. p. 186.
Tasmania.

5280 QUADRINODOSUS Erichs. Wiegm. Arch. 1842, I. p. 186.
Tasmania.

5281 QUADRITUBERCULATUS Bohem. Schh. Gen. Curc. V. p. 361.
N. S. Wales.

5282 SCABRIOR Kirby, Trans. Linn. Soc. XII. p. 429, t. 22, f. 8, a-f; Boisd. Voy. Astrol. II. p. 306; Labr. et Imp. Gen. Curc. II. nr. 8.
N. S. Wales.

5283 SCAPULARIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 204.
Queensland.

Sub-Family. CYLADES.

MYRMACICELUS. Chevrolat.

5284 EXSERTUS Pascoe, Ann. Nat. Hist. X. 1872, p. 95.
W. Australia.

5285 FORMICARIUS Chev. Ann. Soc. Ent. Fr. 1883, p. 359, t. 15, B; Guér. Voy. Coquille, 1830, t. 6, f. 7.
bistriatus Guér. (Rhinolaccus), Voy. Coquille, 1830, p. 112; Boisd. Voy. Astrol. II. p. 321.
unicolor d'Urville, Dej. Cat. 3 ed. p. 267.
N. S. Wales and Victoria.

Sub-Family. APIONIDES.

APION. Herbst.

5286 ALBERTISI Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 230.
Somerset, Cape York.

5287 ARGUTULUM Pascoe, Ann. Nat. Hist. XIII. 1874, p. 388.
Queensland.

5288 COMOSUM Pascoe, Ann. Nat. Hist. XIII. 1874, p. 387.
Swan River, W. Australia; Queensland.

5289 PULICARE Pascoe, Ann. Nat. Hist. XIII. 1874, p. 388.
Swan River, W. Australia.

Sub-Family. ATTELABIDES.

EUOPS. Schönherr.

5290 BAKEWELLI Jekel, Ins. Saund. II. p. 221, nota.
Victoria.

5291 CLAVIGERA Pascoe, Journ. Linn. Soc. XII. 1873, p. 28.
Queensland.

5292 EUCALYPTI Pascoe, Journ. Linn. Soc. XII. 1873, p. 28.
Gayndah, Queensland.

5293 FALCATA Guér. Ic. regn. anim. p. 137, t. 6, f. 4.
Australasiæ Fahrs. Schh. Gen. Curc. V. p. 319.
N. S. Wales and Victoria.

5294 HOWITTI Jekel, Ins. Saund. II. p. 220, nota.
Victoria.

5295 PULCHELLA Pascoe, Ann. Nat. Hist. XVI. 1875, p. 61.
Port Denison.

5296 PUNCTICOLLIS Bohem. Res. Eugen. 1859, p. 117.
N. S. Wales.

5297 TRIGEMINATA Pascoe, Journ. Linn. Soc. XII. 1876, p. 28.
Somerset, Cape York.

Sub-Family. RHINOMACERIDES.

AULETES. Schönherr.

5298 CALCEATUS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 389.
Champion Bay, W. Australia.

5299 FILIROSTRIS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 388.
Albany, King George's Sound.

5300 MELANOCEPHALUS Erichs. Wiegm. Arch. 1842, I. p. 185.
Tasmania.

5301 NIGRITARSIS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 389.
South and West Australia.

5302 SUTURALIS Waterh. (Metopon), Proc. Ent. Soc. Lond. 1842, p. 62; Trans. Ent. Soc. Lond. IV. 1845, p. 69, t. 5, f. 1, a.
Tasmania.

5303 TURBIDUS Pascoe, Ann. Nat. Hist. XIII. 1874, p. 389.
Gawler, South Australia.

Sub-Family. MAGDALINIDES.

MAGDALIS Germar.

5304 MELANOCEPHALA Bohem. Schh. Gen. Curc. VII. (2), p. 142.
Australia.

Sub-Family. BALANINIDES.

BALANINUS. Germar.

5305 AMŒNUS Fabr. Syst. Ent. p. 142; Oliv. Ent. V. (83), p. 225, t. 12, f. 143, a-b; Boisd. Voy. Astrol. II. p. 455.
Sydney.

5306 MASTERSI Pascoe, Ann. Nat. Hist. IX. 1872, p. 139.
Port Denison, Queensland.

Sub-Family. ANTHONOMIDES.

ANTHONOMUS. Germar.

5307 AUSTRALIS Boisd. Voy. Astrol. II. 1835, p. 417; Dej. Cat. 3 ed. p. 303.
Australia.

DIAPELMUS. Erichson.

5308 ERICHSONI Pascoe, Trans. Ent. Soc. Lond. 1870, p. 205.
S. Australia.

5309 MENDAX Erichs. Wiegm. Arch. 1842, I. p. 201.
Tasmania.

5310 VENTRALIS Pascoe, Trans. Ent. Soc. Lond. 1870, p. 205.
W. Australia.

ORCHESTES. Illiger.

5311 PERPUSILLUS Pascoe, Ann. Nat. Hist. XVI. 1875, p. 61.
Champion Bay, W. Australia.

Sub-Family. TYCHIDES.

ELLESCHUS. Stephens.

5312 ORBITALIS Bohem. Schh. Gen. Curc. VII. (2), p. 187.
Australia.

ORICHORA, Pascoe.

5313 TRIVIRGATA Pascoe, Journ. Linn. Soc. X. 1870, p. 486, t. 19, f. 3, a-b.
K. G. Sound, W. Australia.

TYCHIUS. Schönherr.

5314 MINUTISSIMUS Bohem. Res. Eugen. 1859, p. 133.
Sydney.

OCHROPHŒBE. Pascoe.

5315 UNIFORMIS Pascoe, Ann. Nat. Hist. 1872, p. 140.
Champion Bay, W. Australia.

Sub-Family. CIONIDES.

NANOPHYES. Schönherr.

5316 MAURUS Pascoe, Ann. Nat. Hist. XVI. 1875, p. 61.
S. Australia.

CIONUS. Clairville.

5317 FERRUGATUS Blanch. Voy. Pole Sud, IV. p. 255, t. 14, f. 13.
Tasmania.

Sub-Family. LEMOSACIDES.

LÆMOSACCUS. Schönherr.

5318 AUSTRALIS Boisd. Voy. Astrol. 1835, p. 426.
Tasmania.

5319 BREVIPENNIS Pascoe, Journ. Linn. Soc. X. 1870, p. 439.
Wide Bay, Queensland.

5320 CATENATUS Pascoe, Journ. Linn. Soc. XI. 1871, p. 180.
Wide Bay, Somerset, &c., Queensland; W. Australia.

5321 CRYPTONYX Pascoe, Ann. Nat. Hist. 1872, p. 141.
K. G. Sound, W. Australia.

5322 DAPSILIS Pascoe, Ann. Nat. Hist. 1872, p. 140.
S. Australia ?

5323 ELECTILIS Pascoe, Journ. Linn Soc. XI. 1871, p. 180.
Australia.

5324 FULVIROSTRIS Pascoe, Ann. Nat. Hist. XII. 1873, p. 284.
Champion Bay, W. Australia.

5325 FUNEREUS Pascoe, Ann. Nat. Hist. XII. 1873, p. 282.
Gayndah, Queensland.

5326 GIBBOSUS Pascoe, Ann. Nat. Hist. XII. 1873, p. 282.
Champion Bay, W. Australia.

5327 LONGICEPS Pascoe, Ann. Nat. Hist. XII. 1873. p. 281.
Rockhampton, Queensland.

5328 LONGIMANUS Pascoe, Ann. Nat. Hist. 1872, p. 140.
Wide Bay, Queensland.

5329 MAGDALOIDES Pascoe, Ann. Nat. Hist. XII. 1873, p. 283.
Champion Bay, W. Australia.

5330 NARINUS Pascoe, Ann. Nat. Hist. 1872, p. 141.
Port Lincoln, S. Australia.

5331 NOTATUS Pascoe, Journ. Linn. Soc. XI. 1871, p. 180, t. 6, f. 4.
Wide Bay, Queensland.

5332 OCULARIS Pascoe, Ann. Nat. Hist. XII. 1873, p. 281.
Champion Bay, W. Australia.

5333 PECCUARIUS Pascoe, Journ. Linn. Soc. XI. 1871, p. 180.
S. Australia.

5334 QUERULUS Pascoe, Ann. Nat. Hist. XIII. 1878, p. 283.
W. Australia; Victoria.

5335 SEMIUSTUS Pascoe, Ann. Nat. Hist. XIII. 1873, p. 282.
Champion Bay, W. Australia.

5336 SUBSIGNATUS Bohem. Schh. Gen. Curc. VIII. (1), p. 70; Lacord. Gen. Col. VII. 1866, p. 14, nota 2.
Tasmania.

5337 SYNOPTICUS Pascoe, Journ. Linn. Soc. X. 1870, p. 440.
Queensland.

5338 TANTULUS Pascoe, Journ. Linn. Soc. X. 1870, p. 439.
Champion Bay, W. Australia.

5339 TARSALIS Pascoe, Ann. Nat. Hist. XII. 1873, p. 283.
Champion Bay, W. Australia.

5340 USTULUS Pascoe, Journ. Linn. Soc. XI. 1871, p. 181.
Victoria and S. Australia.

Sub-Family. ALCIDIDES.

ALCIDES. Schönherr.

5341 BUBO Fabr. Syst. El. II. p. 474; Bohem. Schh. Gen. Curc. III. p. 612.
Northern Queensland.

5342 PENTASTICUS Chev. Le Nat. III. 1881, p. 372.
Cape York, N. Australia.

5343 PUSILLUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 243.
Somerset, Cape York.

PLATYURUS. Blanchard.

5344 BREVICORNIS Blanch. Voy. Pole Sud, IV. p. 242, t. 14. f. 12.
Tasmania.

Sub-Family. HAPLONYCIDES.

AOLLES. Pascoe.

5345 NUCEUS Pascoe, Journ. Linn. Soc. X. 1870, p. 451.
W. Australia.

5346 RUBIGINOSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 451.
W. Australia.

ZEOPUS. Pascoe.

5347 STOREOIDES Pascoe, Journ. Linn. Soc. XI. 1872, p. 460.
S. Australia.

HAPLONYX. Schönherr.

5348 ALBOFASCIATUS Chev. Le Nat. I. 1879, p. 54.
Tasmania.

5349 ALBOGUTTATUS Chev. Le Nat. I. 1879, p. 60.
Australia.

5350 ANORMIS Chev. Le Nat. I. 1879, p. 38.
Adelaide, S. Australia.

5351 CENTRALIS Pascoe, Journ. Linn. Soc. X. 1870, p. 491.
S. Australia.

5352 CIONOIDES Pascoe, Journ. Linn. Soc. X. 1870, p. 491.
S. Australia.

5353 CIONIFORMIS Chev. Le Nat. I. 1879, p. 54.
K. G. Sound, W. Australia.

5354 DONOVANI Chev. Le Nat. I. 1879, p. 31.
Australia.

5355 DOTATUS Pascoe, Journ. Linn. Soc. X. 1870, p. 488.
S. Australia.

5356 ERICEUS Pascoe, Journ. Linn. Soc. X. 1870, p. 490.
S. Australia.

5357 FALLACIOSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 489.
Queensland.

5358 FASCICULATUS Bohem. Schh. Gen. Curc. VIII. (1), p. 41.
Australia.

5359 FRONTALIS Chev. Le Nat. I. 1879, p. 38.
Tasmania.

5360 Hopei Bohem. Schh. Gen. Curc. VIII. (1), p. 42.
Australia.

5361 insolitus Chev. Le Nat. I. 1879, p. 31.
Australia.

5362 Kirbyi Fahrs. Schh. Gen. Curc. VIII. (1), p. 43.
Australia.

5363 lucius Pascoe, Journ. Linn. Soc. X. 1870, p. 489.
Champion Bay, W. Australia.

5364 Macleayi Chev. Le Nat. I. 1879, p. 31.
Adelaide, S. Australia.

5365 maialis Pascoe, Journ. Linn. Soc. X. 1870, p. 490.
Gawler, S. Australia.

5366 maleficus Lacord. Gen. Atl. VIII. t. 73, f. 1, a-b. (indscript).
Australia.

5367 medio-cinctus Chev Le Nat. I. 1879, p. 54.
Tasmania.

5368 melaspis Chev. Le Nat. I. 1879, p. 38.
S. Australia.

5369 myrrhatus Pascoe, Journ. Linn. Soc. X. 1870, p. 488.
S. Australia.

5370 nigrirostris Chev. Le Nat. I. 1879, p. 30.
Adelaide, S. Australia.

5371 occipitalis Chev. Le Nat. I. 1879, p. 31.
Adelaide, S. Australia.

5372 pectoralis Chev. Le Nat. I. 1879, p. 60.
Australia.

5373 posticalis Chev. Le Nat. I. 1879, p. 54.
Australia.

5374 punctum Chev. Le Nat. I. 1879, p. 38.
Adelaide, S. Australia.

5375 rubiginosus Chev. Le Nat. I. 1879, p. 30.
Adelaide, S. Australia.

5376 rusticula Chev. Le Nat. I, 1879, p. 31.
Queensland.

5377 Schonherri Bohem. Res. Eugen. 1859, p. 134.
N. S. Wales.

5378 SCOLOPAX Pascoe, Journ. Linn. Soc. X. 1870, p. 490.
Queensland.

5379 SEXVITTATUS Chev. Le Nat. I. 1879, p. 54.
Adelaide, S. Australia.

5380 SPENCEI Gyll. Schh. Gen. Curc. III. p. 607; Chev. Le Nat. I. 1879, p. 30.
Australia.

5381 SUTURALIS Chev. Le Nat. I. 1879, p. 54.
Victoria.

5382 TUBICEN Chev. Le. Nat. I. 1879, p. 60.
Port Augusta, S. Australia.

5383 TURTUR Pascoe, Journ. Linn. Soc. X. 1870, p. 492.
S. Australia.

5384 USTIPENNIS Pascoe, Journ. Linn. Soc. X. 1870, p. 488.
Sydney, N. S. Wales.

5385 VENOSUS Pascoe, Journ. Linn. Soc. X. 1870, p. 491.
S. Australia.

5386 VESTIGIALIS Pascoe, Journ. Linn. Soc. X. 1870, p. 489.
Queensland.

5387 VICINUS Chev. Le Nat. I. 1879, p. 60.
Australia.

5388 WATERHOUSEI Chev. Le Nat. I. 1879, p. 31.
Adelaide, S. Australia.

SIGASTUS. Pascoe.

5389 FASCICULARIS Pascoe, Journ. of Ent. II. p. 423, t. 17, f. 6.
N. S. Wales.

Sub-Family. MENEMACHIDES.

ACICNEMIS. Lacordaire.

5390 SORORIA Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 247.
Somerset, Cape York.

BERETHIA, Pascoe.

5391 SANNIO Pascoe, Journ. Linn. Soc. XI. 1872, p. 463, t. 10, f. 2.
Somerset, Cape York.

Sub-Family. CRYPTORHYNCHIDES.

CYLLORRHAMPHUS. Erichson.

5392 TUBEROSUS Erichs. Wiegm. Arch. 1842, I. p. 209.
Tasmania.

MELANTERIUS. Erichson.

5393 ARATUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 249.
Somerset, Cape York.

5394 CARINICOLLIS Pascoe, Ann. Nat. Hist. XVI. 1875, p. 62.
Cape York, N. Australia.

5395 CINNAMOMEUS Pascoe, Ann. Nat. Hist. 1872, p. 142.
Champion Bay, W. Australia.

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METYRUS. Pascoe.

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POROPTERUS. Schönherr.

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IMALIODES. Pascoe.

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PALETICUS. Pascoe.

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DECILAUS. Pascoe.

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TRAGOPUS. Schönherr.

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ACALLES. Schönherr.

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Australia.

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IMALITHUS. Pascoe.

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Queensland.

ONIDISTUS. Pascoe.

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METHIDRYSIS. Pascoe.

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NICONOTUS. Pascoe.

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ACACALLIS. Pascoe.

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MAECHIUS. Pascoe.

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AGRIOCHÆTA. Pascoe.

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PLAGYOCORYNUS. Waterhouse.

5494 QUADRITUBERCULATUS Waterh. Trans. Ent. Soc. Lond. (2), II. p. 202; Lacord. Gen. Atl. VIII. t. 74, f. 3, a-b.
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SALCUS. Pascoe.

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GLOCHINORRHINUS. Waterhouse.

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Northern parts of N. S. Wales, and Queensland.

PERISSOPS. Pascoe.

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ORPHANISTES. Pascoe.

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AXIONICUS. Pascoe.

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Wagga Wagga, N. S. Wales; Gayndah, Queensland.

OSACES. Pascoe.

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ODOSYLLIS. Pascoe.

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EUTHYRRHINUS. Schönherr.

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K. G. Sound, W. Australia.

AXIDES. Pascoe.

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Sydney, N. S. Wales; N. Australia.

CHÆTECTETORUS. Schönherr.

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N. S. Wales (?).

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S. Australia.

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EPHRICUS. Pascoe.

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METACYMIA. Pascoe.

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ACHOPERA. Pascoe.

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CHIMADES. Pascoe.

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N. S. Wales.

MENIOS. Pascoe.

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Sydney, N. S. Wales.

ÆTHREUS.

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TYCHREUS. Pascoe.

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TITUACIA. Pascoe.

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K. G. Sound, W. Australia.

ANILAUS. Pascoe.

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EXITHIUS. Pascoe.

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Tasmania.

DRASSICUS. Pascoe.

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AGENOPUS. Pascoe.

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AONYCHUS. Schönherr.

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S. Australia.

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Champion Bay, W. Australia.

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W. Australia.

COPTOMERUS. Chevrolat.

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Somerset, Cape York.

GASTEROCERUS. Laporte et Bruelle.

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OMYDAUS. Pascoe.

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ŒMETHYLUS. Pascoe.

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Wide Bay, Queensland.

CRYPTORRHYNCHUS. Illiger.

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Sydney, N. S. Wales.

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CŒLOSTERNUS. Schönherr.

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Australia.

ISAX. Pascoe.

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Queensland.

BEROSIRIS. Pascoe.

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Rockhampton, Somerset, &c., Queensland.

MYRTESIS. Pascoe.

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Queensland.

PEZICHUS. Waterhouse.

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Moreton Bay, Queensland.

NECHYRUS. Pascoe.

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Queensland.

ENTELES. Schönherr.

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N. S. Wales.

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N. S. Wales and Queensland.

AMYDALA. Pascoe.

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Wide Bay, Queensland.

PHLŒOGLYMMA Pascoe.

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BLEPIARDA. Pascoe.

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BEPHARUS. Pascoe.

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PROTOPALUS. Schönherr.

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Rockhampton, &c., Queensland.

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Moreton Bay, &c., Queensland.

AMPAGIA. Pascoe.

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K. G. Sound, W. Australia.

IDOTASIA. Pascoe.

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Cape York, Rockhampton, &c., Queensland.

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Wide Bay, Queensland.

Sub-Family. ZYGOPIDES.

MECOPUS. Schönherr.

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Queensland. (Widely distributed).

ILLACURIS. Pascoe.

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Pine Mountain, Wide Bay, &c., Queensland.

Sub-Family. ISORHYNCHIDES.

LOBOTRACHELUS. Schönherr.

5581 EXILIS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 290.
Somerset, Cape York.

5582 STIGMA Pascoe, Journ. Linn. Soc. XII. 1873, p. 44.
Gayndah, Queensland.

OTHIPPIA. Pascoe.

5583 GUTTULA Pascoe, Ann. Mus. Civ. Gen. (2), II. 1885, p. 291.
Somerset, Cape York.

Sub-Family. CEUTORHYNCHIDES.

RHINONCUS. Schönherr.

5584 NIGRIVENTRIS Pascoe, Ann. Nat. Hist. XI. 1873, p. 199.
Gayndah, Queensland.

Sub-Family. PANTOTELIDES.

LITURGUS. Schönherr.

5585 IRRASUS Bohem. Schh. Gen. Curc. VIII. (1), p. 83.
Australia.

Sub-Family. BARIDIIDES.

APHELA. Pascoe.

5586 ALGARUM Pascoe, Trans. Ent. Soc. Lond. 1870, p. 203.
Sea coast of N. S. Wales, Victoria, and W. Australia.

5587 HELOPOIDES Pascoe, Journ. of Ent. II. p. 417, t. 14, f. 4.
N. S. Wales.

5588 PHALERIOIDES Pascoe, Trans. Ent. Soc. Lond. 1870, p. 202.
Queensland.

MYCTIDES. Pascoe.

5589 BARBATUS Pascoe, Journ. Linn. Soc. XII. 1873, p. 60.
Somerset, Cape York.

5590 FAMILIARIS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 293.
Somerset, Cape York.

BARIDIUS. Schönherr.

5591 AMŒNULA Bohem. Schh. Gen. Curc. III. p. 662.
Australia.

5592 AUSTRALIS Boisd. Voy. Astrol. II. 1835, p. 427; d'Urville, Dej. Cat. 3 ed. p. 312.
Australia.

5593 QUADRISIGNATA Bohem. Schh. Gen. Curc. III. p. 659.
Australia.

PLATYPHÆUS. Pascoe.

5594 LYTERIOIDES Pascoe, Ann. Nat. Hist. XVI. 1875, p. 66.
Gayndah, Queensland.

Sub-Family. CALANDRIDES.

BARYSTETHUS. Lacordaire.

5595 HEMISCOTUS Chev. Bull. Soc. Ent. Fr. (6), I. 1881, p. VIII.
Lizard Island, N. E. Coast.

5596 MELANOSOMA Boisd. Voy. Astrol. II. 1835, p. 449; Lacord. Gen. Col. VII. p. 287; Atl. VIII. t. 76, f. 2, a.
Australia.

DIATHETES. Pascoe.

5597 MORIO Pascoe, Journ. Linn. Soc. XII. 1873, p. 73.
Cape York, N. Australia.

TRIGONOTARSUS. Schönherr.

5598 RUGOSUS Boisd. Voy. Astrol. II. 1835, p. 445; Dej. Cat. 3 ed. p. 328.
calandroides Gyll. Schh. Gen. Curc. IV. p. 844; Guér. ic. règn. anim. t. 30, bis. f. 9, a.
N. S. Wales.

SPHENOPHORUS. Schönherr.

5599 INTERSTITIALIS Bohem. Res. Eugen. 1859, p. 148.
N. S. Wales.

5600 SCHONHERRI Gyll. Schh. Gen. Curc. IV. p. 875.
Australia.

CALANDRA. Clairville.

5601 ORIZÆ Linn. Amoen. Ac. VI. 1763, p. 395.
Australia. (Introduced).

Sub-Family. COSSONIDES.

PHŒNOMERUS. Schönherr.

5602 EXILIS Pascoe, Journ. Linn. Soc. XI. 1872, p. 490.
Gayndah, Somerset, &c., Queensland.

NOTIOMIMETES. Wollaston.

5603 PASCOEI Woll. Trans. Ent. Soc. Lond. 1873, p. 594.
S. Australia.

COSSONIDEUS. Wollaston.

5604 PASCOEI Woll. Trans. Ent. Soc. Lond. 1873, p. 603.
W. Australia.

HALORHYNCHUS. Wollaston.

5605 CÆCUS Woll. Trans. Ent. Soc. Lond. 1873, p. 606.
W. Australia.

PENTARTHRUM. Wollaston.

5606 NIGRUM Woll. Trans. Ent. Soc. Lond. 1873, p. 601.
Tasmania.

THAUMASTOPHASIS. Wollaston.

5607 OCULATUS Woll. Trans. Ent. Soc. Lond. 1873, p. 606.
S. Australia.

STEREOMIMETES. Wollaston.

5608 CRASSICORNIS Woll. Trans. Ent. Soc. Lond. 1873, p. 630.
Champion Bay, W. Australia.

NOTIOSOMUS. Wollaston,

5609 AUSTRALIS Woll. Trans. Ent. Soc. Lond. 1873, p. 633.
Australia.

5610 CONGENER Woll. Trans. Ent. Soc. Lond. 1873, p. 634.
W. Australia.

5611 MAJOR Woll. Trans. Ent. Soc. Lond. 1873, p. 633.
S. Australia.

HOMALOTROGUS. Wollaston.

5612 ARCTATUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 315.
Somerset, Cape York.

APHANOCORYNES. Wollaston.

5613 DEPRESSUS Woll. Trans. Ent. Soc. Lond. 1873, p. 634.
K. G. Sound, W. Australia.

PENTAMIMUS. Wollaston.

5614 CANALICULATUS Woll. Trans. Ent. Soc. Lond. 1873, p. 640.
Tasmania.

5615 RHYNCHOLIFORMIS Woll. Trans. Ent. Soc. Lond. 1873, p. 640.
Australia.

5616 SUFFUSUS Woll. Trans. Ent. Soc. Lond. 1873, p. 640.
Australia.

COSSONUS. Clairville.

5617 ALBERTISI Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 317.
Somerset, Cape York.

5618 EXCAVATUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 316.
Somerset, Cape York.

5619 INDIGENS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 316.
Somerset, Cape York.

5620 PRÆUSTUS Redtenb. Reis. Novar. II. p. 171.
N. S. Wales.

ISOTROGUS. Wollaston.

5621 BILINEATUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 318.
Somerset, Cape York.

HYPONOTUS. Wollaston.

5622 SUBPUBESCENS Woll. Trans. Ent. Soc. Lond. 1873, p. 626.
Somerset, Cape York.

ORTHOTEMNUS. Wollaston.

5623 DISPARILIS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 322.
Somerset, Cape York.

STEREOBORUS. Wollaston.

5624 INDUCTUS Pascoe, Ann. Mus. Civ. Genov. (2), II. 1885, p. 320.
Somerset, Cape York.

REVISION OF AUSTRALIAN LEPIDOPTERA.

By E. Meyrick, B.A., F.E.S.

I.

In the present paper I have classified and described the species of five families of the *Macro-Lepidoptera*, my object being to present them in such a form as might afford a ready means to their identification and study. These five families—*Sesiadae*; *Arctiadae*, including the genera usually ranked as *Arctiadae* and *Lithosiadae*; *Hypsidae*, including *Hypsa*, *Nyctemera*, and allies; *Syntomididae*; *Zygaenidae*;—are presented as separately defined groups; and I propose to omit for the present all question of the relation of these groups to one another, or of their comprehension under higher groups. Such descriptions of older authors as still remain unidentified I have included in the form of an appendix at the end of the whole, for convenience of reference; but in some instances identification seems impossible; until identified, they are not to be regarded as distinct species. In the present instance I have also included the four species which alone represent these groups in New Zealand, as they are allied to Australian forms, and may be advantageously considered with them. The information as to localities and habits is necessarily very meagre, and I hope that it may now be supplemented.

I am greatly indebted to Mr. Macleay, Dr. Lucas, and other esteemed correspondents, for the means of examining and describing many new species from their collections; these will be found acknowledged in their proper place. Without them my paper would have been very imperfect, for I paid little attention to these groups until lately, and now regret many past opportunities.

I call attention to the fact that, according to the results of the present paper, the following generic names do not represent genera, and are to be laid aside; some of them are in vague general use among certain writers: viz., *Argina*, Hb.; *Pitane* (second use), *Pallene*, *Lerna*, *Clisobara*, *Aquita*, *Uraba*, *Cocsa*, *Pollanisus*, *Phaos*, and *Ardices*, Walk.; *Diastrophia* and *Toxoloma*, Feld.; *Nepita*, Moore; *Xanthesthes*, Ramb.

SESIADAE.

Ocelli present, large. Antennæ about ¾, thickened posteriorly, in ♂ swollen towards apex, ciliated. Maxillary palpi absent. Posterior tibiæ with spurs all present. Frenum developed. Forewings with 13 veins, 1 simple at base, 2 from near angle of cell, 7 and 8 stalked, 12 from upper margin of cell, 13 free. Hindwings with 1c present, 5 from about middle of transverse vein, 8 free. Larvæ 16-legged, feeding internally.

The family appears characteristic of the northern hemisphere, and barely reaches Australia, being only represented by stragglers of one genus.

1. Sesia, F.

Tongue well-developed. Antennæ thickened on terminal half, in ♂ rather abruptly swollen towards apex, strongly ciliated with fascicles except near apex, in both sexes with a small terminal fascicle. Palpi moderately long, arched, ascending, second joint shortly rough-scaled beneath, terminal joint rather long, cylindrical, tolerably pointed. Abdomen with large expansible anal tuft. Posterior tibiæ roughly haired above, spurs long. Forewings with vein 2 from near angle of cell, 7 and 8 stalked, 7 to apex, 12 from about middle of cell. Hindwings with veins 3 and 4 approximated at base or short-stalked, 6 absent, 7 from angle.

The larvæ feed in roots or shoots.

A. Anal tuft wholly black ....3. *tipuliformis*.
B. „ „ partly orange.
    a. Abdomen black with three or four orange
        bands..1. *isozona*.
    b. Abdomen orange, base of segments black..2. *chrysophanes*.

1. *Ses. isozona*, n. sp.

♂ ♀. 21-22 mm. Head and palpi orange, crown bluish-black except at back. Antennæ blue-black, in ♀ orange in front on lower half. Thorax blue-black, a spot on each side and one behind orange. Abdomen blue-black, on undersurface in ♂ with six, in ♀ with five orange bands, first, third, fifth, and in ♂ sixth continued round upper surface also, anal tuft in ♂ black, apex orange, in ♀ orange, sides black. Legs blue-black, tibiæ with a median orange band. Forewings very narrow, elongate, gradually somewhat dilated, apex obtuse, hindmargin oblique, hardly rounded; colourless, transparent; a moderate black margin all round; a narrow black fascia on transverse vein, rather oblique inwards from costa, in ♀ narrowly interrupted with orange near inner margin; lower median vein from base to end of cell in ♂ black, in ♀ together with space between it and dorsal streak orange; apical half of posterior clear space in ♀ orange, in ♂ only a very small subapical orange spot, veins in posterior space wholly orange: cilia black. Hindwings elongate-ovate; colourless, transparent, with a narrow black margin, becoming orange towards base of inner margin; veins black; transverse vein marked by a narrow black bar obscurely edged with orange; cilia black, tips orange; veins 3 and 4 approximated at base.

Maryborough, Queensland; eight specimens (Australian Museum and Coll. Masters).

2. *Ses. chrysophanes*, n. sp.

♂ ♀ 18-20 mm. Differs from *S. isozona* only as follows: Antennæ in ♂ white above towards apex. Thorax blue-black, patagia and a posterior spot orange. Abdomen wholly orange, base of segments in ♀ narrowly, in ♂ broadly blue-black, anal tuft in ♂ black mixed with orange, sides orange, in ♀ orange, black on sides. Forewings with black margin narrower; base and a dorsal streak from base to $\frac{2}{3}$ orange in ♀; black fascia slightly oblique outwards from costa; posterior clear space with veins black, apical half orange and anteriorly black-margined. Hindwings with black margin narrower, transverse vein without black bar.

Bowen, Queensland; three specimens taken by Mr. A. Simson (Coll. Raynor and Masters).

3. *Ses. tipuliformis*, Cl.

♂. 18-19 mm. Differs from *S. isozona* only as follows: Head and thorax black, collar slenderly orange. Palpi black, longitudinally ochreous-yellow beneath. Abdomen black, with slender ochreous-yellow subbasal, median, and subapical rings. Forewings with apical half of posterior clear space very dull orange, anteriorly black-margined, veins black, posteriorly broad, no dorsal orange streak. Hindwings with small black triangular spot on upper half of transverse vein, no orange markings; veins 3 and 4 stalked.

New Zealand, common in the South Island; introduced from Europe with the garden currant (*Ribes*), in the shoots of which the larva feeds. It is almost certain to be found sooner or later in Tasmania, but I have not heard of its occurrence there as yet.

ARCTIADAE.

Ocelli present, conspicuous or partially concealed. Antennæ from ⅓ to ⅔ of forewings, not thickened. Maxillary palpi absent. Posterior tibiæ with all spurs present. Frenum developed. Forewings with 1 simple at base, 7 and 8 stalked. Hindwings with 1c absent, 6 and 7 approximated at base or stalked, 8 rising out of upper margin of cell, completely coincident with it towards base. Larvæ 16-legged, uniformly clothed with fascicles of long dense hairs.

Usually distributed into two families, *Arctiadae* and *Lithosiadae*; the only distinction asserted is in the presence or absence of ocelli, and is founded on error; the ocelli are, so far as my material enables me to judge, always present, but variable in size, and tending during the development of the family to become smaller and closely appressed to the eye, so as to be partially concealed; every degree is found, and some acknowledged *Lithosiadae* have them conspicuous enough; the distinction is therefore imaginary, and I have included all in one family. The structure of vein 8 of the hindwings is the most characteristic point, and affords a ready test for recognition. Of the genera here given *Deiopeia* is the most ancestral, and approaches nearly to the *Hypsidae*, from which the *Arctiadae* appear to have been developed. One or two genera usually placed in this family, I class (according to the diagnosis given above) with the *Hypsidae*.

The following is a tabulation of the Australian genera.

1. Forewings 6 absent ....24. *Hestiarcha.*
,, ,, present .... 2.
2. Forewings 9 absent (10 and 11 present).... 2. *Exotrocha.*
,, ,, present .... 3.
3. Forewings 8 and 9 separate .... 4.
,, ,, stalked .... 9.
4. Forewings 9 and 10 separate ....11. *Heterallactis.*
,, ,, stalked .... 5.
5. Antennæ in ♂ ciliated .... 6.
,, ,, pectinated .... 8.
6. Hindwings 5 absent ....15. *Parelictis.*
,, ,, present .... 7.
7. Hindwings 8 from close before transverse vein ....22. *Scæodora.*
,, ,, before middle of cell ....16. *Termessa.*
8. Tongue well-developed ....17. *Cluaca.*
,, absent ....27. *Anestia.*
9. Forewings 11 anastomosing with 12 ......10.
,, ,, separate ....17.
10. Antennæ in ♂ ciliated ....11.
,, ,, pectinated ....29. *Asura.*
11. Hindwings 5 absent ....12.
,, ,, present ....16.
12. Forewings 2 out of 3.......................... 6. *Palæxera.*
,, ,, remote from 3 .... 13.
13. Forewings 10 connected with 9 by bar ..... 8. *Brunia.*
,, ,, separate ....14.

14. Forewings in ♂ beneath with discal flap ... 7. *Teulisna.*
,, ,, without flap ....15.

15. Hindwings in ♂ with apex obliquely truncate .... 4. *Scoliacma.*
,, ,, normal ... . 5. *Tigrioides.*

16. Hindwings 4 and 5 stalked or from point..12. *Calligenia.*
,, ,, remote ....10. *Symmetrodes.*

17. Hindwings 4 or 5 absent ....18.
,, both present ....22.

18. Forewings 5 absent ....19.
,, ,, present..........................20.

19. Forewings 10 connected with 9 by bar ... 3. *Calamidia.*
,, ,, separate ....14. *Neobrocha.*

20. Forewings 10 absent ....19. *Sorocostia.*
,, ,, present ....21.

21. Forewings 10 connected with 9 by bar ... 9. *Lithosia (A).*
,, ,, not ,, ... 21. *Mosoda.*

22. Forewings 6 connected with 7 by bar ......13. *Hectobrocha.*
,, ,, not ,, ...23.

23. Forewings 10 connected with 9 by bar ......9. *Lithosia (B).*
,, ,, not ,, ...24.

24. Hindwings 3 and 4 stalked ....25.
,, ,, separate ....28.

25. Forewings 4 and 5 stalked ....23. *Chiriphe.*
,, ,, separate ....26.

26. Antennæ of ♂ pectinated.. ... .20. *Nola.*
,, ,, ciliated ....27.

27. Forewings 10 out of 7 ....28. *Eutane.*
,, ,, separate ....18. *Zia.*

28. Antennæ of ♂ pectinated ....29.
,, ,, ciliated ....32.

29. Thorax densely hairy beneath ....30.
,, ,, smooth ....25. *Thallarcha.*

30. Tongue rudimentary ....31.
„ „ developed ....32. *Areas.*
31. Forewings 10 out of 9 ....31. *Spilosoma.*
„ „ rising separate...................30. *Metacrias.*
32. Hindwings 6 and 7 stalked ....26. *Comarchis.*
„ „ separate ....33. *Deiopeia.*

I remark again that in the following generic descriptions, according to my usual practice, the normal 12 veins of the forewings and 8 veins of the hindwings are understood to be all present and separate at origin, unless expressly indicated otherwise here or in the family diagnosis.

2. Exotrocha, n.g.

Tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1), with scattered longer single cilia. Palpi short, porrected, tolerably filiform. Forewings in ♂ beneath with round membranous excrescence beneath costa beyond middle; 2 from $\frac{3}{4}$ of cell, 5 absent, 7 and 8 stalked, 9 absent, 10 and 11 distorted. Hindwings with veins 3 and 4 stalked, 5 parallel, 6 and 7 stalked, 8 from middle of cell.

The distortion caused by the subcostal excrescence makes the neuration of the forewings somewhat doubtful; the ♀ is required to obtain certainty.

4. *Ex. liboria*, Cr.

(*Noctua liboria*, Cr. 345 D.; *Lithosia liboria*, Feist, Mag. Zool. 1839, 8, pl. XXVI, 1.)

♂ 28-30 mm. Head and thorax red; palpi, antennæ, collar, and outer edge of patagia black. Abdomen orange, banded with black, with black hairs above towards base. Legs blackish. Forewings elongate, gradually dilated, costa almost straight, apex rounded, hindmargin somewhat oblique, rounded; dull orange-red; a narrow-blackish streak along costa from base to $\frac{3}{4}$, and another along inner margin from base to beyond anal angle: cilia blackish. Hindwings black; a large irregular subcordate yellow spot in disc before middle, not reaching margins; cilia black.

Newcastle, New South Wales; two specimens (Australian Museum). Probably also occurs as an exotic, but recorded localities doubtful. Cramer's figure, if really this insect, is atrocious; however, Feisthamel's leaves no doubt.

3. CALAMIDIA, Butl.

Tongue well developed. Antennæ in ♂ filiform, moderately ciliated, with scattered much longer cilia. Palpi moderate or very long, ascending, with appressed scales, terminal joint rather short, cylindrical, or very long, subclavate. Thorax somewhat hairy beneath; abdomen clothed with long hairs above. Forewings with vein 2 from middle of cell, 5 absent, 6 from point with or out of 9 near base, 7 and 8 out of 9, 10 connected with 9 by a bar. Hindwings with veins 3 and 4 from a point, 5 absent, 6 and 7 approximated at base, 8 from before middle of cell.

It is questionable whether the two following are not sexes of the same species, but as I have seen very few specimens, I have no authority for uniting them in face of the great difference in palpi and colouring.

5. *Cal. salpinctis*, n.sp.

♂. 41 mm. Head, palpi, antennæ, and thorax pale brownish-ochreous; palpi very long, slender, second joint long, terminal joint rather longer than second, subclavate, bent forward. Abdomen ochreous-yellow. Legs whitish-ochreous, anterior femora dark fuscous above. Forewings elongate, narrow at base, gradually dilated, costa strongly arched, apex obtuse, hindmargin obliquely rounded; whitish-ochreous, suffused with light fuscous except on an elongate-oval patch extending above inner margin from base to middle, beyond and beneath which the suffusion is much darker fuscous: cilia whitish-ochreous, fuscous-tinged. Hindwings and cilia ochreous-yellow.

Victoria; one specimen (Coll. Lucas).

6. *Cal. hirta*, Walk.

(*Lithosia hirta*, Walk. Bomb. 510.)

♀. 42-45 mm. Head, palpi, antennæ, thorax, and legs whitish; palpi rather short, terminal joint short, somewhat pointed.

Abdomen pale ochreous-yellowish. Forewings elongate, narrow at base, gradually dilated, costa strongly arched, apex obtuse, hindmargin obliquely rounded; white, towards inner margin anteriorly and in disc posteriorly very faintly ochreous-tinged; cilia white. Hindwings and cilia pale ochreous-yellowish.

Sydney, New South Wales; three specimens (Coll. Masters and Macleay).

4. SCOLIACMA, n.g.

Tongue well-developed. Antennæ in ♂ subserrate, moderately ciliated (1½), with scattered longer cilia. Palpi short, porrected, with appressed or somewhat rough scales, terminal joint short, pointed. Forewings with vein 2 from beyond middle, 3 and 4 stalked or separate, 5 absent, 6 out of 7 near base or rising separate and connected with it near base (both forms in same species), 8 and 9 out of 7, 11 anastomosing with 12. Hindwings in ♂ with apex broadly obliquely truncate and subconcave, sometimes with costal fold or discal excrescence; 3 and 4 stalked or coincident, 5 absent, 6 and 7 stalked, 8 from near middle.

7. *Scol. bicolor*, Boisd.

(*Lithosia bicolora*, Boisd., Voy. Astr. V, 211, pl. III, 9; *L. rubratra*, Tepper, Trans. Royal Soc. S. Austr. V, 30.)

♂ ♀. 29-35 mm. Head and collar crimson. Palpi, antennæ, thorax, abdomen, and legs blackish; outer edge of patagia, anal tuft, and posterior tibiæ light crimson. Forewings elongate, somewhat dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; veins 3 and 4 stalked; bright crimson, disc somewhat mixed with blackish; posterior $\frac{2}{5}$ blackish except on an attenuated costal streak; cilia pale crimson. Hindwings light crimson; a broad blackish hindmarginal fascia, somewhat narrowed beneath; cilia pale crimson.

Glen Innes (3,000 feet), Newcastle, Sydney, and Bombala, New South Wales; Melbourne, Victoria; Mount Lofty, South Australia; and occurs in Tasmania; December; apparently never common. Boisduval's spelling of *bicolora* is an inadmissible solecism.

8. *Scol. orthotoma*, n. sp.

♂. 25-29 mm. Head, palpi, and thorax fuscous, face pale yellowish-ochreous. Antennæ and legs light ochreous. Abdomen pale ochreous-yellowish. Forewings elongate, hardly dilated, costa gently arched, apex rounded, hindmargin very obliquely rounded; veins 3 and 4 separate; light brownish-ochreous, sometimes irrorated with fuscous; a straight cloudy rather dark fuscous line from $\frac{2}{3}$ of costa to $\frac{2}{3}$ of inner margin, more or less interrupted above middle; cilia light brownish-ochreous. Hindwings and cilia light ochreous-yellowish; a short costal fold beneath before middle.

Melbourne, Victoria; two specimens (Coll. Lucas and Masters).

9. *Scol. pactolias*, n. sp.

♂. 31 mm. Head, thorax, abdomen, and legs yellow-ochreous; palpi and antennæ fuscous. Forewings elongate, posteriorly dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; veins 3 and 4 stalked; yellow-ochreous, with a few scattered fuscous scales: cilia yellow-ochreous. Hindwings and cilia pale yellowish-ochreous.

Melbourne, Victoria, in April; one specimen (Coll. Lucas).

5. TIGRIOIDES, Butl.

Tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1), with scattered much longer cilia. Palpi short, porrected, tolerably filiform, terminal joint short. Forewings with vein 2 from middle, 3 and 4 stalked, 5 absent, 6 out of 7 near base or separate and sometimes connected with 7 by bar, 8 and 9 out of 7, 11 anastomosing with 12. Hindwings with veins 3 and 4 stalked or coincident, 5 absent, 6 and 7 stalked or coincident, 8 from about middle.

The variations in the structure of vein 6 of the forewings all occur in different individuals of the same species, and are of no importance.

1. Forewings without markings ....13. *nana.*
   „ with dark markings .... 2.
2. With longitudinal branched streaks on veins...12. *furcifera.*
   Without longitudinal streaks..................... 3.
3. With three blackish fasciae.......................10. *alterna.*
   Without „ „ „ .... 4.
4. With broad greyish-fuscous hindmarginal band..11. *heminephes.*
   Without „ „ „ „ 14. *spilarcha.*

10. *Tigr. alterna,* Walk.

(*Setina alterna,* Walk. Bomb. 520; *Lithosia transversa,* ib. Suppl. 229.)

♂. 27-31 mm. Head, thorax, and abdomen ochreous-yellow; thorax with a bar behind collar, patagia except apex, and a posterior spot black. Palpi blackish. Antennæ grey. Legs blackish, posterior pair ochreous-yellow. Forewings elongate, hardly dilated, costa slightly arched, apex obtuse, hindmargin rather obliquely rounded; ochreous-yellow; markings blackish; a narrow costal streak from base to a small transverse spot at $\frac{2}{5}$; a transverse bar from inner margin at $\frac{1}{3}$, reaching more than half across wing; a narrow irregular-edged fascia from $\frac{2}{3}$ of costa to $\frac{3}{4}$ of inner margin; a rather narrow hindmarginal fascia, dilated in middle: cilia light ochreous-yellow, above apex blackish. Hindwings with veins 3 and 4 stalked, 6 and 7 stalked; pale ochreous-yellow; a large blackish-grey apical blotch, connected with a narrow cloudy hindmarginal fascia; cilia pale ochreous-yellow.

Blackheath (3,500 feet) and Bathurst (2,300 feet), New South Wales; Melbourne, Victoria; not uncommon.

11. *Tigr. heminephes,* n. sp.

♂. 26-29 mm. Head, palpi, antennæ, thorax, and abdomen ochreous-yellow; patagia dark fuscous. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate, posteriorly strongly dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; ochreous-yellow; a dark fuscous streak along basal fourth of costa; posterior $\frac{2}{5}$ greyish-fuscous except on an irregular costal streak: cilia ochreous-yellow. Hindwings and cilia light ochreous-yellow; veins 3 and 4 stalked, 6 and 7 coincident.

Bathurst (2,300 feet), New South Wales; four specimens.

12. *Tigr. furcifera*, Walk.

(*Setina furcifera*, Walk. Bomb. 520; *S. trifurcata*, ib. Suppl. 237.)

♂. 24-27 mm. Head and thorax ochreous-yellow, with a broad blackish longitudinal stripe across crown and back, and a blackish spot on shoulder. Palpi ochreous mixed with blackish. Antennæ dark fuscous. Abdomen ochreous-yellow. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate, posteriorly dilated, costa slightly arched, apex obtuse, hindmargin obliquely rounded; ochreous-yellow; a five-branched blackish streak on subcostal vein, and three-branched similar streak on lower median, confluent towards base; a rather thick blackish streak on vein 1: cilia ochreous-yellow. Hindwings ochreous-yellow; sometimes more or less suffused with grey towards costal half and along submedian fold except towards base; cilia ochreous-yellow.

Tasmania; several specimens sent by Mr. Barnard, jun.; from its marking the species evidently frequents grass.

13. *Tigr. nana*, Walk.

(*Lithosia nana*, Walk. Bomb. 507.)

♂ ♀. 20-22 mm. Head, palpi, antennæ, thorax, abdomen, and legs light yellow-ochreous. Forewings elongate, somewhat dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; wholly light yellow-ochreous. Hindwings and cilia light yellow-ochreous; veins 3 and 4 stalked, 6 and 7 stalked.

Duaringa, Queensland; several specimens sent by Mr. G. Barnard.

14. *Tigr. spilarcha*, n. sp.

♂ ♀. 23-27 mm. Head, palpi, antennæ, and thorax greyish-fuscous, face whitish-ochreous. Abdomen pale ochreous-yellowish. Legs light ochreous. Forewings elongate, narrow, scarcely dilated, costa slightly arched, apex obtuse, hindmargin slightly rounded; light greyish-ochreous, sprinkled with fuscous; a moderate ochreous-whitish costal streak from base to $\frac{2}{3}$; a small cloudy dark fuscous spot on inner margin at $\frac{3}{4}$, and a dot in disc obliquely beyond it: cilia whitish-ochreous. Hindwings and cilia pale ochreous-yellowish; veins 3 and 4 coincident, 6 and 7 stalked.

Sydney, New South Wales; also occurs in Victoria; June; five specimens.

6. PALAEXERA, n. g.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated (1), with scattered longer cilia. Palpi short, porrected, loosely scaled, terminal joint short, tolerably pointed. Forewings in ♂ beneath with strong costal fold; 2 out of 3 near base, 3 and 4 long-stalked, 5 absent, 8 and 9 out of 7, 10 from point with 7, 11 anastomosing with 12. Hindwings in ♂ beneath with ridge of erect scales towards middle of costa; 2 and 3 stalked, 4 and 5 absent, 6 and 7 stalked, 8 from middle.

15. *Pal. phyllodes*, n. sp.

♂ ♀. 21-23 mm. Head, palpi, antennæ, thorax, and legs pale ochreous, sometimes brownish-tinged. Abdomen pale yellowish-ochreous. Forewings elongate, in ♂ strongly, in ♀ moderately dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; in ♂ yellow-ochreous suffused with brown, in ♀ pale ochreous closely irrorated with rather dark fuscous; two narrow cloudy darker fuscous fasciae, in ♂ very obscure, first beyond middle, obsolete on costal half, second about $\frac{4}{5}$, curved, parallel to hindmargin: cilia whitish-ochreous, with a grey line. Hindwings and cilia whitish-ochreous; disc in ♂ ochreous-yellow.

Sydney, New South Wales, in November; three specimens. Frequents swampy jungle; in repose closely resembles a withered leaf.

7. TEULISNA, Walk.

Tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1), with scattered longer cilia. Palpi short, ascending, loosely scaled, terminal joint short, somewhat pointed. Thorax beneath with a transparent oval bladder on each side between second and third coxæ. Forewings in ♂ with strong flap of scales from upper margin of cell above, completely covering cell; 2 from middle, 3 and 4 stalked, 5 absent, 6 from point with 9, 7 and 8 out of 9, 11 anastomosing with 12. Hindwings in ♂ beneath with short thick scaled ridge on submedian fold at base; 3 and 4 stalked, 5 absent, 6 and 7 stalked, 8 from $\frac{2}{3}$.

16. *Teul. dasypyga*, Feld.

(*Diastrophia dasypyga*, Feld. Reis. Nov. pl. CVI, 13.)

♂. 28 mm. Head and antennæ whitish-ochreous, fuscous-tinged. Thorax fuscous. Abdomen hairy, dark grey. Forewings elongate, moderately dilated, costa gently arched, apex obtuse, hindmargin rather obliquely rounded, anal angle produced into a strong rounded triangular projection; fuscous; a broad fuscous-whitish costal streak from base to beyond middle, cut by an oblique blackish bar before middle; a narrow obscure darker fascia indicated at $\frac{2}{3}$; cilia fuscous. Hindwings and cilia light ochreous-yellow.

Queensland; one specimen (Coll. Lucas). Felder quotes it from Celebes; I have little doubt of having correctly identified his species; his figure, although stated to represent a ♂, does not show the projecting anal angle of the forewings, which is probably a sexual characteristic, but it is most likely that he mistook the sex, as in many other instances.

8. BRUNIA, Moore.

Tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1), with scattered longer cilia. Palpi rather short, porrected, loosely scaled, terminal joint short, somewhat pointed. Forewings with vein 2 from middle, 3 and 4 stalked, 5 absent, 6 from point with 9, 7 and 8 out of 9, 10 connected with 9 by bar, 11 anastomosing with 12. Hindwings with veins 3 and 4 stalked, 5 absent, 6 and 7 stalked, 8 from middle.

17. *Brun. harpophora*, n.sp.

♀. 33-35 mm. Head, palpi, and abdomen pale yellow-ochreous. Antennæ dark fuscous. Thorax fuscous-grey, anterior margin rather narrowly pale yellow-ochreous. Legs dark grey, femora and posterior pair yellow-ochreous. Forewings elongate, somewhat dilated, costa slightly arched, apex rounded, hindmargin rather obliquely rounded ; slaty-grey ; a moderate pale yellowish-ochreous streak along costa from base, continued round apex and gradually attenuated thence to anal angle ; base of inner margin pale yellowish-ochreous : cilia pale yellowish. Hindwings and cilia pale ochreous-yellowish.

Cooktown and Cairns, Queensland ; three specimens (Coll. Macleay).

18. *Brun. replana*, Lw.

(*Lithosia replana*, Lw. Ins. N.S.W. 16, pl. XV ; *L. dispar*, Leach Zool. Misc. I, 109, pl. XLIX, 1-3.)

♂ ♀. 28-41 mm. Head ochreous-yellow, with a blackish bar on forehead. Palpi and antennæ blackish. Thorax blackish, posterior half of collar and a posterior spot ochreous-yellow. Abdomen ochreous-yellow. Legs blackish. Forewings elongate, somewhat dilated, costa slightly arched, apex obtuse, hindmargin rather obliquely rounded ; blackish-grey ; a moderate pale yellow-ochreous almost costal streak from base to $\frac{3}{4}$; base narrowly pale yellow-ochreous except on costa ; in ♂ a rather large irregular whitish-ochreous blotch in disc before middle : cilia pale ochreous-yellowish. Hindwings and cilia light ochreous-yellowish ; a rather narrow irregular variable cloudy dark grey streak along upper half of hindmargin sometimes obscurely continued to anal angle.

Queensland ; Sydney, New South Wales ; South Australia ; in October, November, March, April, and June ; common.

9. Lithosia, F.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated, with scattered much longer cilia. Palpi rather short, porrected, filiform, terminal joint short, obtuse. Thorax rather hairy beneath. Forewings with vein 2 from middle, 3, 4, 5 approximated at base, 7 and 8 out of 9, 10 connected with 9 by bar. Hindwings with vein 3 almost from point with or out of 4, 4 and 5 stalked or coincident, 6 and 7 stalked, 8 from middle.

Sect. A. veins 4 and 5 of hindwings coincident.

19. *Lith. chionora*, n. sp.

♂. 29 mm. Head, palpi, and antennæ whitish-yellowish. Thorax white. Abdomen and legs pale ochreous-yellowish, anterior and middle tibiæ and tarsi infuscated. Forewings elongate, moderately dilated, costa posteriorly moderately arched, apex obtuse, hindmargin obliquely rounded, slightly sinuate; white; costal edge slenderly ochreous-yellow: cilia white. Hindwings and cilia pale ochreous-yellow; 3 and 4 stalked.

Sydney, New South Wales; one specimen (Coll. Masters).

Sect. B. veins 4 and 5 of hindwings stalked.

20. *Lith. bicosta*, Walk.

(*Lithosia bicosta*, Walk. Bomb. 506; *L. fraterna*, Butl., Trans. Ent. Soc. Lond. 1877, 349.)

♂ ♀. 29-31 mm. Head and palpi orange, face and antennæ dark fuscous. Thorax fuscous-grey, shoulders orange. Abdomen hairy, whitish-ochreous, sometimes greyish-tinged. Legs grey, posterior pair whitish-ochreous. Forewings elongate, moderately dilated, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; grey, slightly brownish-tinged; a slender orange costal streak, bordered beneath by a slender white streak: cilia grey, tips whitish. Hindwings and cilia light ochreous-yellow; 3 and 4 almost from point.

Sydney, New South Wales; Tasmania; Mount Lofty, South Australia; October; not uncommon.

10. SYMMETRODES, n.g.

Tongue well-developed. Antennæ filiform, (in ♂ probably evenly ciliated,) with scattered longer cilia. Palpi short, porrected, tolerably filiform, terminal joint short, pointed. Forewings with vein 2 from middle, 7 and 8 out of 9, 11 anastomosing with 12. Hindwings with veins 6 and 7 stalked, 8 from middle.

21. *Symm. nitens*, Walk.

(*Lithosia nitens*, Walk. Suppl. 231; *L. remota*, ib. Char. Het. 9, teste Butl.)

♀. 27-28 mm. Head, palpi, antennæ, thorax and abdomen light ochreous-yellow. Legs fuscous, posterior pair yellowish. Forewings elongate-triangular, costa moderately arched, apex rounded, hindmargin obliquely rounded; whitish-ochreous, base ochreous-yellow; sometimes a faint curved greyish line at $\frac{1}{4}$; sometimes a cloudy dentate curved greyish line at $\frac{3}{4}$; sometimes posterior half of wing suffused obscurely with grey: cilia whitish-ochreous. Hindwings whitish-ochreous, sometimes obscurely suffused with grey except towards base; cilia whitish-ochreous.

Queensland; three specimens (Coll. Lucas). Appears to vary considerably. In this instance I have identified Walker's species from description only, and it is possible I may be mistaken.

11. HETERALLACTIS, n.g.

Tongue well-developed. Antennæ —(?). Palpi rather short, slender, filiform, terminal joint moderate, pointed. Forewings with vein 2 out of 3, 3 and 4 stalked, 5 absent, 6 approximated to 7 at base, 7 and 8 stalked. Hindwings with veins 3 and 4 approximated at base, 5 absent, 6 and 7 stalked, 8 from middle.

A singular genus.

22. *Het. euchrysa*, n. sp.

♂. 19 mm. Head and collar clear pale yellow, thorax fuscous. Palpi yellowish, towards base dark fuscous. (Antennæ broken.) Abdomen grey, anal tuft whitish-ochreous. Legs whitish-ochreous.

Forewings oblong-oval, costa strongly arched, apex rounded, hindmargin obliquely rounded; bright pale brassy-yellow; a fuscous basal patch, edged by a straight dark purple fuscous line from costa near base to $\frac{1}{4}$ of inner margin; a rather broad somewhat irregular fuscous-purple fascia from costa about $\frac{2}{3}$ to inner margin before anal angle, anteriorly dark-margined, containing two darker dots in disc, and followed by a faint reddish suffusion below middle: cilia pale brassy-yellowish. Hindwings broad, rounded; grey; cilia grey, towards apex whitish.

Brisbane, Queensland, in September; one specimen.

12. Calligenia, Dup.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated (1), with scattered longer cilia. Palpi rather short, porrected, loosely scaled, terminal joint short, tolerably pointed. Forewings with vein 2 from middle, 7 and 8 out of 9, 11 anastomosing with 12. Hindwings with veins 4 and 5 from a point or stalked, 6 and 7 stalked, 8 from beyond middle.

The variations in structure of veins 4 and 5 of the hindwings occur within the limits of the same species.

A. Hindwings with broad dark fuscous marginal band ....26. *structa.*
B. „ without „ „
  a. Forewings more or less rosy.
    1. Thorax grey, with rosy spots ....24. *cyclota.*
    2. „ wholly rosy........................23. *pyraula.*
  b. Forewings not rosy ....25. *melitaula.*

23. *Call. pyraula*, n. sp.

♀. 31 mm. Head, palpi, antennæ, thorax, and legs bright ochreous-rosy. Abdomen whitish-rosy. Forewings elongate, strongly dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; bright ochreous-rosy; markings formed by irroration of light grey scales, obscurely darker-edged; four or five spots near base; a slender twice indented fascia at $\frac{1}{5}$; a narrow fascia at $\frac{2}{5}$, sharply angulated above middle, connected with first fascia above middle by a slender streak; a narrow irregularly curved fascia from beyond middle of costa to $\frac{3}{4}$ of inner margin, touching angle of second fascia, and indented near inner margin; a very indistinct cloudy band between this and hindmargin, tending to form streaks on veins; hindmargin and costa posteriorly clearer rosy; a hindmarginal series of dark grey dots: cilia pale grey. Hindwings and cilia rosy-whitish, ochreous-tinged.

Queensland; one specimen (Coll. Lucas).

24. *Call. cyclota*, n. sp.

♀. 32 mm. Head pale rosy, with a grey cross on crown. Palpi grey, rosy towards base. Antennæ grey. Thorax grey, with about ten irregular pale rosy spots. Abdomen whitish-rosy. Legs rosy, femora and tibiæ with dark grey subapical bands. Forewings elongate, strongly dilated, costa moderately arched, apex obtuse, hindmargin obliquely rounded; dark grey; a round yellow reddish-edged spot very near base in middle; a pale yellowish rosy-edged suboblong spot on costa at $\frac{1}{3}$, connected with inner margin at $\frac{1}{4}$ by a curved series of three small rosy spots; a pale yellowish subtriangular spot, mixed with rosy, on middle of costa, a round yellowish rosy-edged spot in disc beneath it, and a small rosy spot on middle of inner margin; two transverse series of about eight small spots, first about $\frac{3}{4}$, curved, nearly parallel to hindmargin, second hindmarginal: cilia grey. Hindwings ochreous-whitish; hindmargin narrowly pale rosy; cilia ochreous-whitish.

Cairns, Queensland; two specimens (Coll. Lucas and Macleay.)

25. *Call melitaula*, n.sp.

♂ ♀. 28-32 mm. Head, palpi, and thorax ochreous-yellow, slightly reddish-tinged; palpi externally grey; thorax with two anterior dorsal spots, a mark on outer side of patagia, and a transverse posterior mark grey. Antennæ grey. Abdomen and legs ochreous-yellow, tarsi and tibiæ grey towards apex, anterior pair almost wholly grey. Forewings elongate-triangular, costa moderately arched, apex rounded, hindmargin rather obliquely rounded; yellow-ochreous, base slightly reddish-tinged; a basal spot on costa and four narrow curved fasciæ rather dark grey; first at $\frac{1}{4}$; second slightly before middle, irregular, connected with first by a bar in middle and less perfectly again near inner margin; third about $\frac{2}{3}$, connected with second by a line towards costa, and with an acute indentation below middle almost touching second; fourth subterminal, anteriorly acutely dentate, and touching third near costa, connected with hindmargin by a bar at $\frac{1}{4}$ and another in middle: cilia light ochreous-yellow, sometimes obscurely barred with grey. Hindwings and cilia light ochreous-yellowish.

Queensland; three specimens (Coll. Macleay).

26. *Call. structa*, Walk.

(*Pallene structa*, Walk. Bomb. 543.)

♂ ♀. 17-22 mm. Head, palpi, thorax, and abdomen ochreous-orange; thorax with three or four very small grey spots. Antennæ dark grey. Legs orange, suffused with dark grey above. Forewings rather elongate-triangular, costa moderately arched, apex rounded, hindmargin rounded, hardly oblique; ochreous-orange, more or less suffusedly sprinkled with dark fuscous; two or three dark fuscous spots near base; three rather strong dentate narrowly curved dark fuscous transverse lines, first about $\frac{1}{4}$, second before middle, third from $\frac{2}{3}$ of costa to $\frac{3}{4}$ of inner margin; veins posteriorly sometimes lined with dark fuscous; a hindmarginal series of dark fuscous dots: cilia grey. Hindwings ochreous-orange; a few grey scales in disc before middle; a more or less broad dark fuscous hindmarginal band, somewhat narrowed beneath; cilia dark fuscous.

Richmond River, Newcastle, and Sydney, New South Wales; not uncommon.

13. HECTOBROCHA, n.g.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated (1), with scattered longer cilia. Palpi moderate, porrected, loosely scaled, terminal joint moderate, cylindrical, obtuse. Thorax rather hairy beneath. Forewings with vein 2 from middle, 5 absent, 6 connected with 7 by a bar near base, 8 and 9 out of 7, 10 from point with 7. Hindwings with veins 3 and 4 from a point, 6 and 7 stalked, 8 from $\frac{1}{3}$.

27. *Hect. pentacyma*, n.sp.

♂. 28 mm. Head white. Palpi and antennæ blackish. Thorax white, a spot on base of patagia, two spots on middle of back and two on posterior margin black. Abdomen and legs pale ochreous-yellowish, anterior and middle tibiæ and tarsi suffusedly banded with dark fuscous. Forewings rather elongate-triangular, costa moderately arched, apex rounded, hindmargin somewhat obliquely rounded; white, towards hindmargin becoming whitish-ochreous; a blackish elongate spot on costa near base, and two small obliquely placed black spots in middle very near base; four somewhat irregular slightly curved dentate blackish transverse lines, nearly parallel; first at $\frac{1}{4}$, second in middle, third at $\frac{3}{4}$, fourth near beyond third; a rather large round black dot in disc beyond first line, two others obliquely placed beyond second, and another beyond and touching fourth; a dentate submarginal dark fuscous line, teeth touching hindmargin: cilia pale ochreous-yellowish. Hindwings and cilia pale ochreous-yellowish.

Queensland (?); one specimen, unfortunately without record of locality.

14. NEOBROCHA, n.g.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated, with scattered much longer cilia. Palpi rather short, loosely scaled, rough at base, ascending, terminal joint rather short, obtuse. Thorax in ♂ beneath with striated bladder on each side above third coxae. Forewings with vein 2 from middle, 3 sometimes running into 4 before apex, 5 absent, 6 from point with 7 or separate, 8 and 9 out of 7, 10 sometimes out of 7 near base.

Hindwings with veins 3 and 4 from a point or separate, 5 absent, 6 and 7 stalked, 8 from middle.

The two species are very similar, but have structural differences.

28. *Neobr. phaeocyma*, n. sp.

♂. 25 mm. Head, palpi, and antennæ pale brownish-ochreous, space between antennæ fuscous. Thorax pale brownish-ochreous, with an indistinct dark fuscous transverse anterior line. Abdomen grey, anal tuft whitish-ochreous. Legs pale ochreous, anterior tibiæ fuscous towards apex. Forewings subtriangular, costa gently arched, apex rounded, hindmargin obliquely rounded: a short thick membranous fold beneath near costa beyond cell; veins 3 and 4 confluent towards apex, 6 from point with 7, 10 and 11 distorted; light brownish-ochreous, with scattered fuscous scales, and ill-defined dark fuscous markings; four somewhat curved dentate lines parallel to hindmargin, at $\frac{1}{4}$, $\frac{2}{5}$, and two near together about $\frac{2}{3}$; a small discal spot near before third; a faint subterminal similar line; a hindmarginal row of subquadrate fuscous spots: cilia whitish-ochreous, with a grey line. Hindwings and cilia grey, slightly brownish-tinged; veins 3 and 4 separate.

Thursday Island, Torres Straits; one specimen (Coll. Lucas).

29. *Neobr. adoxa*, n. sp.

♂. 35 mm. Head, antennæ, thorax, abdomen, and legs pale fuscous; palpi dark fuscous. Forewings rather elongate-triangular, costa moderately arched, apex rounded, hindmargin somewhat oblique, rounded; veins 3 and 4 separate, 6 separate, 10 out of 7 near base; light fuscous, thinly sprinkled with dark fuscous, more thickly towards base and hindmargin; four cloudy dentate somewhat unevenly curved dark fuscous transverse lines, at $\frac{1}{4}$, middle, and two together at $\frac{2}{3}$; a dark fuscous discal dot beyond second: cilia whitish-fuscous. Hindwings and cilia whitish-fuscous; veins 3 and 4 from a point.

New South Wales; one specimen (Coll. Macleay).

15. PARELICTIS, n.g.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated (⅔), with scattered longer cilia. Palpi moderate, arched, ascending, second joint with dense scales, somewhat rough beneath, terminal joint moderate, filiform, obtuse. Thorax rather hairy beneath. Forewings in ♂ with a short rough-scaled furrow beneath vein 2; 2 from ¾, 7 and 8 stalked, 9 and 10 stalked. Hindwings in ♂ with apical part of costa lobed, partially aborted, and a short rough-scaled furrow beneath vein 2; 5 absent, 6 and 7 stalked, 8 from middle, in ♂ much contorted.

30. *Par. saleuta*, n. sp.

♂ ♀. 37-39 mm. Head, antennæ, and thorax fuscous mixed with black. Palpi black, somewhat mixed with whitish-ochreous. Abdomen light ochreous-yellow. Legs blackish, ringed with whitish, posterior pair suffused with ochreous-whitish. Forewings rather elongate-triangular, costa gently arched, in ♂ sinuate in middle, apex obtuse, hindmargin slightly sinuate, somewhat oblique, inner margin in ♂ emarginate beyond middle; white, finely and densely irrorated with dark fuscous; about twelve cloudy subdentate irregular curved transverse dark fuscous lines, formed by minute blackish striæ on a yellowish ground; veins obscurely yellowish: cilia dark fuscous mixed with whitish, with yellowish lines on veins. Hindwings and cilia light ochreous-yellow.

Sydney, New South Wales; also from Victoria; five specimens (Coll. Lucas, Macleay, and Masters).

16. TERMESSA, Walk.

Tongue well-developed. Antennæ in ♂ filiform, evenly ciliated (1), with scattered longer cilia. Palpi moderate, arched, ascending, loosely scaled, terminal joint rather short, pointed. Thorax rather hairy beneath. Forewings with vein 2 from ⅔, 7 and 8 stalked, 9 and 10 stalked. Hindwings with veins 6 and 7 from a point or very short-stalked, 8 from ⅓.

A. Hindwings white ....31. *nivosa.*
B. „ yellow.
  a. Forewings with apex obtuse.
    1. Groundcolour of forewings dark fuscous..32. *catocalina.*
    2. „ „ yellow or whitish.
      i. Anterior margin of thorax blackish.
        *. Forewings with first fascia blackish-fuscous.
          †. Cilia of hindwings wholly yellow.33. *Shepherdi.*
          ††. „ „ broadly blackish beneath apex........................34. *laeta.*
        **. Forewings with first fascia ochreous-yellow, black-margined ......35. *gratiosa.*
      ii. Anterior margin or thorax not blackish.36. *congrua.*
  b. Forewings with apex subfalcate.
    1. Forewings with blackish fasciæ entire...37. *discrepans.*
    2. „ „ not reaching costa ......38. *conographa.*

31. *Term. nivosa*, Walk.

(*Lerna nivosa*, Walk. Suppl. 805.)

♂ ♀. 27-29 mm. Head white, face and palpi orange. Antennæ blackish. Thorax white, with a black dot on shoulder. Abdomen white, anal tuft orange. Legs orange, anterior and middle tibiæ and tarsi spotted with blackish. Forewings rather elongate-triangular, costa slightly arched, apex tolerably obtuse, hindmargin straight, somewhat oblique, rounded beneath; white; a slender black costal streak from base to $\frac{4}{5}$, having on its lower margin a black dot at each extremity, and one at $\frac{1}{2}$ of costa; a short orange elongate mark on costa beyond this: cilia white, on upper $\frac{2}{3}$ of hindmargin with five or six adjacent quadrate blackish spots on basal half. Hindwings white; a small round blackish spot on hindmargin below middle, sometimes obsolete; cilia white.

Sydney, New South Wales; Melbourne, Victoria; in September; three specimens.

32. *Term. catocalina*, Walk.

(*Clisobara catocalina*, Walk. Suppl. 269.)

♂. 28-29 mm. Head, palpi, antennæ, thorax, and legs dark fuscous; abdomen and posterior legs ochreous-yellowish. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; dark fuscous, sprinkled with white hair-scales, which tend to form a spot on costa before middle; the absence of white irroration forms five cloudy irregularly dentate darker transverse lines; first very near base, second about $\frac{1}{5}$, third from $\frac{2}{5}$ of costa to middle of inner margin, fourth from beyond middle of costa to $\frac{3}{4}$ of inner margin, fifth from costa near apex to anal angle: cilia dark fuscous, somewhat mixed with whitish. Hindwings ochreous-yellow; a moderate almost apical blackish spot; a large round blackish spot on hindmargin below middle, sending a narrow streak along hindmargin to anal angle; cilia pale yellow.

Sydney, New South Wales, in October; five specimens.

33. *Term. Shepherdi*, Newm.

(*Termessa Shepherdi*, Newm., Trans. Ent. Lond. III. (N.S.) 285, pl. XVIII, 11).

♀. 33 mm. Head whitish-ochreous. Palpi and antennæ blackish. Thorax ochreous-white, anterior margin and patagia black. Abdomen light ochreous-yellow. Legs dark fuscous, posterior pair yellowish. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; ochreous-white, hindmargin more ochreous; costal edge black towards base; a narrow black fascia near base, not reaching inner margin; two broad blackish fasciæ, sprinkled with whitish except on margins, very irregularly dentate; first from about $\frac{1}{3}$ of costa to $\frac{2}{5}$ of inner margin, second from $\frac{3}{5}$ of costa to anal angle; an irregular blackish streak along upper $\frac{2}{3}$ of hindmargin, tending to form five small spots: cilia dark grey, above apex and above anal angle broadly whitish-ochreous. Hindwings ochreous-yellow; a small blackish spot before apex; a larger suboval blackish spot resting on hindmargin below middle; cilia wholly ochreous-yellow.

Melbourne, Victoria; two specimens.

34. *Term. læta*, Walk.

(*Termessa læta*, Walk. Bomb. 1689.)

♂ ♀. 27-29 mm. Head and thorax ochreous-whitish or yellow; collar, palpi, and antennæ black. Abdomen ochreous-yellow. Legs dark fuscous, posterior pair yellowish. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; whitish-ochreous or ochreous-yellow, with blackish-fuscous markings; costal edge black towards base; a small spot on base of costa; two moderate or rather broad very irregular-edged fasciæ, rarely touching in disc and on inner margin; first from $\frac{1}{3}$ of costa to $\frac{2}{5}$ of inner margin, second from $\frac{2}{3}$ of costa to anal angle; an irregular subtriangular spot on upper half of hindmargin, sometimes touching second fascia: cilia blackish-fuscous, above apex and above anal angle broadly pale ochreous-yellow. Hindwings ochreous-yellow; a small or moderate blackish spot before apex; a small or moderate round blackish spot near or resting on hindmargin below middle, sometimes sending a slender streak along hindmargin to anal angle; cilia ochreous-yellow, beneath apex broadly blackish.

Sydney and Mount Kosciusko (3,800), New South Wales; Melbourne, Victoria; Albany, West Australia; in October, November, and January, rather common.

35. *Term. gratiosa*, Walk.

(*Eutane gratiosa*, Walk. Suppl. 239.)

♂ ♀. 23-25 mm. Head white. Palpi and antennæ black. Thorax white, a broad anterior band blackish. Abdomen and legs ochreous-yellow. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin hardly rounded, rather oblique;

white; costal and dorsal margins slenderly ochreous-yellowish; costal edge black towards base, with a small black basal spot; a moderately broad rather irregular-edged ochreous-yellow fascia from $\frac{1}{3}$ of costa to before middle of inner margin, somewhat mixed with fuscous, and strongly margined with dark fuscous; a moderate rather irregular-edged dark fuscous fascia from $\frac{3}{4}$ of costa to anal angle, rather angulated inwards in middle, slightly mixed with ochreous in disc; a triangular blackish spot on upper half of hindmargin, sometimes touching second fascia: cilia dark fuscous, above apex and above anal angle broadly ochreous-whitish. Hindwings ochreous-yellow; a moderate blackish spot before apex, and a similar spot on hindmargin below middle, sending a slender streak along inner margin towards anal angle: cilia ochreous-yellow, beneath apex broadly blackish.

Sydney, New South Wales; also from Victoria; in October; four specimens.

36. *Term. congrua*, Walk.

(*Termessa congrua*, Walk. Suppl. 265.)

♂ ♀. 28-31 mm. Head, palpi, thorax, and abdomen ochreous-yellow; patagia dark fuscous except towards apex. Antennæ grey. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin somewhat obliquely rounded; light ochreous-yellow, with blackish-fuscous markings; a small spot on base of costa; a moderate irregular fascia from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin; a similar slightly broader fascia from $\frac{2}{3}$ of costa to anal angle; a subtriangular spot on hindmargin above middle, sometimes connected with second fascia; cilia dark fuscous, above apex and above anal angle broadly ochreous-yellow. Hindwings ochreous-yellow; a dark fuscous irregular fascia from costa near apex to about middle of hindmargin, thence along hindmargin to anal angle, dilated in middle, sometimes connected with hindmargin beneath apex by a bar; cilia ochreous-yellow, towards anal angle grey, and sometimes on a spot beneath apex.

Sydney, New South Wales, in October; five specimens.

37. *Term. discrepans,* Walk.

(*Termessa discrepans,* Walk. Suppl. 265; *T. hamula,* Feld. Reis. Nov. pl. CVI, 5.)

♀. 25-30 mm. Head light ochreous-yellow or whitish, face and palpi black. Antennæ grey. Thorax blackish, anterior margin rather broadly light ochreous-yellow or whitish. Abdomen ochreous-yellow. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate-triangular, costa gently arched, apex acute, hindmargin deeply concave beneath apex, rather oblique, rounded beneath; light ochreous-yellow or ochreous-whitish, with two moderate irregular-edged blackish fasciæ; first from $\frac{1}{3}$ of costa to before middle of inner margin, second from $\frac{3}{4}$ of costa to anal angle: cilia whitish-yellowish, on upper half of hindmargin and anal angle blackish. Hindwings ochreous-yellow; a moderate blackish hindmarginal fascia, deeply acutely indented above middle, attenuated towards anal angle; cilia light ochreous-yellow, above and below middle of hindmargin broadly dark grey.

New South Wales; Fernshaw, Victoria; three specimens. Felder quotes South America as a locality; this is undoubtedly one of his numerous errors.

38. *Term. conographa,* n.sp.

♀. 24 mm. Head whitish-ochreous, face black. Palpi pale yellowish, terminal joint blackish. Antennæ dark fuscous. Thorax whitish-ochreous, posterior half black. Abdomen light ochreous-yellow. Legs yellow, anterior and middle tibiæ and tarsi dark fuscous. Forewings triangular, costa anteriorly straight, posteriorly strongly arched, apex acute, falcate, hindmargin concave beneath apex, thence hardly oblique, rounded; clear whitish-ochreous; a large triangular black patch extending on near inner margin from near base to middle, upper side rather near and parallel to costa, posterior side straight, hardly oblique; a broad erect black fascia resting on posterior third of inner margin, not reaching costa, apex rounded, leaving a narrow hindmarginal streak of ground colour; a small black apical spot: cilia whitish-ochreous, on apex and anal angle black, beneath apex black at base. Hindwings light ochreous-yellow; a moderate irregular dark fuscous hindmarginal fascia, indented and almost interrupted above middle, below middle with an angular projection, on anal angle suddenly narrowed; cilia dark fuscous, with apical and median pale yellowish spots, on inner margin pale yellowish.

Maryborough, Queensland; one specimen (Australian Museum).

17. Cluaca, Walk.

Tongue well-developed. Antennæ in ♂ moderately bipectinated throughout. Palpi moderate, porrected, with loosely appressed scales, terminal joint moderate, somewhat pointed. Abdomen in ♂ somewhat tufted laterally towards apex. Forewings with vein 2 from beyond middle, 7 and 8 stalked, 9 and 10 stalked. Hindwings with veins 3 and 4 from a point or short-stalked, 6 and 7 closely approximated at base or short-stalked, 8 from ⅓.

39. *Clua. struthias*, n.sp.

♂. 31 mm. Head, palpi, antennæ, and thorax blackish; collar red, mixed with black in middle. Abdomen light ochreous-yellow. Legs dark fuscous. Forewings rather elongate-triangular, costa moderately arched, apex tolerably rectangular, hindmargin rather obliquely rounded; blackish-fuscous; a pale ochreous-yellow streak along inner margin from base to ⅘, anteriorly dilated into an angular yellow spot, posteriorly merged with a broad outwards-curved pale ochreous-yellow fascia from beyond middle of costa to ¾ of inner margin, on costa blackish-edged, considerably dilated in disc, and containing a curved transverse-linear blackish-fuscous discal spot: cilia dark fuscous. Hindwings light ochreous-yellow; an indistinct grey discal dot; a very narrow dark fuscous hindmarginal fascia; cilia dark fuscous; veins 3 and 4 short-stalked, 6 and 7 short-stalked.

New South Wales; one specimen (Coll. Macleay).

40. *Clua. rubricosta*, Walk.

(*Cluaca rubricosta*, Walk. Suppl. 269.)

♂. 29-33 mm. Head, antennæ, and thorax blackish; collar red. Palpi red. Abdomen light ochreous-yellow, rosy-tinged. Legs blackish, posterior pair above whitish-ochreous, rosy-tinged, coxæ rosy. Forewings rather elongate-triangular, costa posteriorly moderately arched, apex obtuse, hindmargin somewhat obliquely rounded; blackish-fuscous; a narrow red costal streak from $\frac{1}{5}$ to $\frac{2}{3}$; a small spot at base of inner margin and a dot in middle very near base pale rosy or yellowish; sometimes a pale rosy or yellowish dot on inner margin at $\frac{3}{4}$, in one specimen surmounted by a small round yellow spot: cilia blackish-grey, tips paler. Hindwings light ochreous-yellow; a moderate blackish hindmarginal band, narrowed beneath and not quite reaching anal angle; cilia dark grey, on inner margin ochreous-yellow, rosy-tinged; veins 3 and 4 from a point, 6 and 7 approximated at base.

Fernshaw, Victoria; also from Tasmania; three specimens.

18. ZIA, Walk.

Face with projecting scales; tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1). Palpi moderately long, porrected, clothed with dense loose scales beneath. Thorax crested posteriorly. Abdomen with small crest near base. Middle and posterior tibiæ with long loose hairs above. Forewings with tufts of scales on surface; 2 from middle, 7 and 8 out of 9. Hindwings with veins 3 and 4 stalked, 5 approximated to 4 at base, 6 and 7 from a point, 8 from middle.

41. *Zi. tactalis*, Walk.

(*Zia tactalis*, Walk. Cramb. 110; *Aquita horridella*, ib. 200).

♂ ♀. 24-34 mm. Head, thorax, and abdomen white, somewhat sprinkled with brownish, thorax with some marginal black scales.

Palpi brownish, internally white. Antennæ whitish. Legs light fuscous. Forewings elongate, suboblong, slightly dilated, costa gently arched, apex rounded, hindmargin oblique, almost straight; white, sometimes irrorated with fuscous; a blackish streak along submedian fold from base to middle, bordered above by a reddish-fuscous suffusion extending anteriorly to costa; two tufts of blackish-fuscous scales obliquely placed in disc; two series of short fine black longitudinal strigulæ, first from $\frac{1}{4}$ of costa to $\frac{2}{5}$ of inner margin, acutely angulated in disc, second from middle of costa to beneath costa at $\frac{2}{3}$, thence to near middle of hindmargin, and acutely angulated to $\frac{2}{3}$ of inner margin; a cloudy brown subtriangular spot on costa at $\frac{3}{4}$, containing a black strigula; a short oblique brown streak before hindmargin beneath apex, containing two short black longitudinal strigulæ; a dark brown hindmarginal line: cilia fuscous mixed with white. Hindwings in ♂ grey-whitish, in ♀ pale grey, apex and hindmargin darker; cilia grey-whitish.

Rockhampton, Queensland; Sydney, New South Wales; three specimens.

19. SOROCOSTIA, Ros.

Face with projecting scales; tongue well-developed. Antennæ in ♂ filiform, rather strongly ciliated ($1\frac{1}{2}$-2), basal joint somewhat tufted. Palpi from moderate to very long, straight, porrected, densely rough-haired above and beneath. Middle and posterior tibiæ clothed with long fine loose hairs above, in ♀ less strongly. Forewings with tufts of scales on surface; 2 from beyond middle, 7 and 8 out of 9, 10 absent. Hindwings with veins 2, 3, and 5 parallel, 4 absent, 6 and 7 stalked or rarely from a point, 8 from middle.

The forewings have in all the species of this and the following genus three more or less strong tufts of scales in a row near the costa, the first being near the base and the third about the middle. The species are all small and inconspicuous, and therefore much neglected. The length of the palpi is stated in terms of the breadth of the eye.

A. Head wholly white.
a. Forewings with blackish transverse lines.
1. Forewings with three black strigulæ before lower part of hindmargin ......42. *paroxynta.*

2. Forewings without black strigulæ before lower part of hindmargin.
i. Forewings with first and second tufts black ....44. *semograpta.*
ii. Forewings with first and second tufts light grey ....53. *leucoma.*
b. Forewings without blackish transverse lines.
1. Forewings with well-defined slender white subterminal line ....47. *vetustella.*
2. Forewings without well-defined slender white subterminal line.
i. Forewings with second tuft connected with costa by a direct streak........46. *paromoea.*
ii. Forewings with second tuft not connected with costa by a direct streak 45. *irenica.*

B. Head more or less irrorated with darker.
a. Forewings with a blackish subcostal streak from base ....48. *aulacota.*
b. Forewings without a blackish subcostal streak from base.
1. Forewings without blackish transverse lines...49. *parallacta.*

2. Forewings with blackish transverse lines.
i. Forewings without hindmarginal black marks ....,.......... ....51. *arachneis.*
ii. Forewings with hindmarginal black marks.
*. Hindmarginal black marks longitudinally elongate................ 43. *trigonota.*
**. Hindmarginal black marks round, dot-like..............................
†. Forewings with a small round black subapical spot ....52. *epicentra.*
††. Forewings without a small round black subapical spot 50. *cycota.*

42. *Sor. paroxynta*, n. sp.

♀. 14-16 mm. Head white. Palpi 3, white, externally with a longitudinal ochreous streak irrorated with black. Antennæ whitish. Thorax white, sprinkled with fuscous. Abdomen whitish-grey. Legs grey-whitish, anterior and middle tarsi dark fuscous ringed with whitish. Forewings elongate, somewhat dilated, costa moderately arched, apex roundpointed, hindmargin nearly straight, rather strongly oblique; grey, very finely irrorated with white; a blackish irroration forming a cloudy median streak from base to middle, expanded in disc; lines very fine, black, somewhat interrupted; first from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin, strongly curved; second from middle of costa very obliquely outwards, twice very acutely dentate outwards above middle, thence to inner margin at $\frac{3}{4}$, posteriorly irregularly margined with white except towards costa; inner and hind margins narrowly suffused with brownish-ochreous; an ochreous-brown streak near before and parallel to lower half of hindmargin, containing three short black sometimes confluent longitudinal strigulæ; a hindmarginal row of short black strigulæ: cilia grey, irrorated with white points, and with a row of black points. Hindwings and cilia light grey.

Sydney, New South Wales; in August and March; three specimens.

43. *Sor. trigonota*, n. sp.

♂ ♀. 18-19 mm. Head and thorax white, thinly irrorated with grey. Palpi 3, grey, irrorated with white. Antennæ and abdomen whitish. Legs grey, ringed with white, posterior pair white. Forewings elongate-triangular, costa moderately arched, apex rounded, hindmargin nearly straight, rather strongly oblique; whitish-grey; a black dot on base of costa; a fine oblique blackish strigula from costa near base to first tuft; a blackish mark on costa beyond $\frac{1}{4}$; first and second lines indicated by two rows of black dots, starting from blackish marks on costa; first from $\frac{2}{5}$ of costa to $\frac{1}{4}$ of inner margin, angulated on second tuft, which is blackish; a blackish mark on costa beyond this, terminating in third tuft, which is white posteriorly ; second line from $\frac{3}{4}$ of costa parallel to hindmargin, indented beneath costa, preceded by a very indistinct similar line; subterminal and hindmarginal rows of longitudinally elongate black marks ; a triangular fuscous shade on hindmargin above middle, produced obscurely along margin : cilia grey, with white points, and a few blackish scales. Hindwings and cilia grey-whitish.

Melbourne, Victoria ; two specimens (Coll. Lucas).

44. *Sor. semograpta*, n. sp.

♀. 16 mm. Head, antennæ, and thorax white. Palpi $1\frac{3}{4}$, white, with a few black points. Abdomen whitish-grey. Legs white, sprinkled with dark fuscous, anterior tibiæ banded with dark fuscous. Forewings elongate-triangular, costa gently arched, apex round-pointed, hindmargin nearly straight, rather strongly oblique ; white ; a small black spot on costa near base ; a black dot in middle near base ; first and second tufts black in front, white behind ; a small black spot on costa at $\frac{1}{3}$, touching second tuft, whence proceeds a fine black inwards sinuate line to inner margin at $\frac{2}{5}$; a double twice sinuate ill-defined blackish line from beyond middle of costa to $\frac{3}{4}$ of inner margin ; a subdentate blackish line from costa near apex to anal angle, sharply indented outwards near costa and less strongly in middle, anteriorly suffused on upper $\frac{2}{3}$; a blackish hindmarginal line, suffusedly dilated at apex : cilia blackish, irrorated with white points. Hindwings and cilia light grey.

Sydney, New South Wales ; Deloraine, Tasmania ; Mount Lofty, South Australia ; four specimens, in October, November, and March.

45. *Sor. irenica*, n. sp.

♂ ♀. 18-19 mm. Head, antennæ, and thorax white. Palpi $4\frac{1}{2}$-5, white, extenally sprinkled with fuscous. Abdomen and legs grey-whitish. Forewings elongate-triangular, costa slightly arched, apex round-pointed, hindmargin straight, very oblique ; white, partially thinly sprinkled with pale greyish-ochreous ; three greyish-ochreous transverse streaks, anteriorly suffused, posteriorly well-defined; first from disc before middle to middle of costa; second from ¾ of costa to beyond middle of inner margin; third hindmarginal, attenuated towards apex, containing an obscure white streak in lower half: cilia white, with a few greyish-ochreous points. Hindwings and cilia grey-whitish.

Mount Kosciusko (4300-5000 feet), New South Wales; three specimens, in January.

46. *Sor. paromoea*, n. sp.

♂. 15 mm. Head, antennæ, and thorax white. Palpi 4, white, externally irrorated centrally with dark fuscous. Abdomen whitish-grey. Legs grey, ringed with whitish. Forewings rather short, triangular, costa slightly arched, apex round-pointed, hindmargin almost straight, rather strongly oblique; white, partially thinly sprinkled with greyish-ochreous; first and second tufts anteriorly greyish-ochreous mixed with blackish, connected with costa by cloudy greyish-ochreous direct streaks, second also with middle of costa by an oblique streak; two greyish-ochreous transverse streaks, anteriorly suffused, posteriorly sharply defined, marked with dark grey on veins; first from ¾ of costa to beyond middle of inner margin, second hindmarginal: cilia white, irrorated with greyish-ochreous points except on a median line. Hindwings whitish-grey; cilia white, base greyish.

Duaringa, Queensland; one specimen received from Mr. G. Barnard.

47. *Sor. vetustella*, Walk.

(*Eromene vetustella*, Walk. Suppl. 1763; *Nola strictalis*, Z., Zool. Bot. Ver. 1872, 459 pl. II, 3; *Sorocostia vetustella*, Ros., Ann. Mag. N.H. 1885, 436.)

♂ ♀. 17-19 mm. Head, antennæ, and thorax white, patagia sprinkled with fuscous. Palpi 3-3½, white, externally irrorated with dark fuscous. Abdomen whitish-grey. Legs dark fuscous, ringed with whitish, posterior pair whitish. Forewings elongate-triangular, costa gently arched, apex round-pointed, hindmargin nearly straight, oblique; light ochreous-brown, towards base suffusedly irrorated with white, veins posteriorly blackish; tufts anteriorly blackish, posteriorly white; a rather broad irregular white subcostal streak from base to above second tuft, connecting with a narrower white streak from second tuft to below third; a fine fuscous indistinct line from $\frac{1}{3}$ of costa to $\frac{1}{3}$ of inner margin, curved outwards to touch second tuft, indented below middle; a straight irregular-edged white streak from costa near apex to $\frac{2}{3}$ of inner margin, anteriorly sharply defined, posteriorly suffused, above extending to apex; a fine irregular dentate white subterminal line, touching hindmargin below middle: cilia fuscous, irrorated with white. Hindwings and cilia light grey.

Blackheath (3,500 feet) and Mount Kosciusko (4,300 feet), New South Wales; Victoria; Mount Lofty, South Australia; in January, several specimens.

48. *Sor. aulacota*, n. sp.

♂ ♀. 18-23 mm. Head, antennæ and thorax white, more or less thinly sprinkled with fuscous. Palpi $4\frac{1}{2}$-5, white externally irrorated with dark fuscous. Abdomen whitish. Legs dark fuscous, irrorated and ringed with white, posterior pair whitish. Forewings very elongate-triangular, costa gently arched, apex round-pointed, hindmargin somewhat rounded, very oblique; fuscous, irregularly and suffusedly irrorated with white; a suffused blackish streak beneath costa from base to middle; a fine obscure very acutely angulated transverse line of dark fuscous dots about $\frac{1}{5}$; two blackish-fuscous transverse lines, acutely angulated above middle; first from middle of costa to middle of inner margin, followed by a parallel series of black dots sometimes confluent with it; second from $\frac{3}{4}$ of costa to inner margin before anal angle, marked with black strigulæ on veins, somewhat interrupted below angle; a hindmarginal series of black strigulæ: cilia dark fuscous, densely irrorated with white, basal half barred with white. Hindwings and cilia grey-whitish.

Warragul, Victoria; Deloraine, Tasmania; in December, four specimens.

49. *Sor. parallacta*, n. sp.

♂ ♀. 15-18 mm. Head, antennæ, and thorax white, irrorated with grey. Palpi 4, white, externally irrorated with dark grey. Abdomen whitish-grey. Legs dark grey, ringed with whitish, posterior pair whitish. Forewings elongate-triangular, costa slightly arched, apex round-pointed, hindmargin hardly rounded, rather strongly oblique; greyish-fuscous, irrorated with white; tufts anteriorly blackish, posteriorly white; three faint irregular fuscous lines, posteriorly obscurely margined with whitish; first from ¼ of costa to ⅓ of inner margin, angulated on second tuft; second from middle of costa to ⅔ of inner margin, angulated in middle; third from ¾ of costa to anal angle, angulated above middle; an obscure transverse similar mark in disc between second and third; a row of obscure fuscous spots along hindmargin and apical third of costa: cilia fuscous, irrorated with white. Hindwings and cilia whitish-grey.

Mount Kosciusko (5,500 feet), New South Wales; in January, three specimens.

50. *Sor. cycota*, n sp.

♂ ♀. 16-19 mm. Head and antennæ white, sprinkled with grey. Palpi 3, white, externally irrorated with dark fuscous. Thorax white, irrorated with grey, sometimes obscurely spotted with dark fuscous. Abdomen light grey. Legs dark grey, ringed with whitish, posterior pair grey-whitish. Forewings elongate-triangular, costa moderately arched, apex tolerably obtuse, hindmargin somewhat rounded, rather strongly oblique; grey, very finely irrorated with white, and with scattered dark fuscous scales; tufts anteriorly black, posteriorly white; three ill-defined rather irregular fine blackish lines, posteriorly obscurely margined with whitish; first from ⅓ of costa to ⅓ of inner margin, angulated on second tuft; third tuft connected with costa by a black strigula; second from ⅔ of costa to ⅔ of inner margin, upper half rather strongly curved outwards; third from ¾ of costa to anal angle, twice irregularly sinuate, somewhat marked with blackish on veins; a hindmarginal series of black dots: cilia grey, irrorated with white, and with scattered dark fuscous scales. Hindwings grey; cilia whitish-grey.

Thursday Island, Torres Straits (Lucas); Glen Innes (3000 feet) and Sydney, New South Wales; Melbourne, Victoria; Mount Lofty, South Australia; in August, October, and December, six specimens.

51. *Sor. arachneis*, n. sp.

♂. 22 mm. Head, palpi, and thorax white, irrorated with dark grey; palpi 2. Antennæ whitish. Abdomen whitish-grey. Legs whitish, irrorated with dark fuscous. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin rounded, somewhat oblique; grey, very finely irrorated with white and blackish; an oblique black strigula on costa near base; a very fine indistinct blackish line from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin, acutely angulated outwards above and below middle; a very fine indistinct somewhat interrupted blackish line from a spot on costa before middle to beneath costa at $\frac{3}{4}$, thence bent parallel to hindmargin, below middle twice acutely angulated inwards; a faint darker irregular subterminal line: cilia grey, irrorated with white and blackish points. Hindwings and cilia grey-whitish.

Sydney, New South Wales; in October, one specimen.

52. *Sor. epicentra*, n. sp.

♂ ♀. 25-26 mm. Head, palpi, and antennæ white, finely sprinkled with dark fuscous; palpi $1\frac{2}{3}$, terminal joint thick. Thorax white, irregularly spotted with fuscous and thinly sprinkled with dark fuscous. Abdomen grey-whitish. Legs white mixed with fuscous, anterior tarsi dark fuscous ringed with whitish. Forewings elongate-triangular, costa moderately arched, apex rounded, hindmargin rather obliquely rounded; white, irrorated with pale ochreous-grey, and a few scattered black scales; tufts anteriorly light ochreous-grey, posteriorly white; a fine black transverse line near base before first tuft, sometimes nearly obsolete; a fine black anteriorly white-margined line from ¼ of costa to ⅓ of inner margin, rather strongly curved outwards, indented in middle; a short fine blackish strigula from costa before middle to third tuft; second line double, fine, blackish, outer more dotted, posteriorly white-margined, included space light ochreous-grey, from ⅔ of costa to ⅔ of inner margin, forming a rounded almost rectangular bend in middle, indented inwards beneath middle; a small round blackish spot near hindmargin beneath apex, connected obliquely with costa by two blackish dots; two blackish dots before hindmargin about middle; a short blackish erect strigula from anal angle; a hindmarginal series of round black dots: cilia white, irrorated with pale ochreous-grey, faintly barred. Hindwings and cilia grey-whitish; a grey hindmarginal line.

Sydney, New South Wales; two specimens (Coll. Masters).

53. *Sor. leucoma*, n. sp.

♂ ♀. 13-14 mm. Head and antennæ white. Palpi 2, white, thinly sprinkled with black. Thorax white, sometimes with a few black points. Abdomen whitish-grey. Legs white, more or less irrorated with black, tarsi blackish with white rings. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded; ochreous-white, posteriorly more ochreous-tinged, more or less suffused with whitish-grey, with a few scattered black points; tufts very large, pale grey; a short thick direct black strigula from costa near base before first tuft; a black dot on costa at ¼; two parallel approximated cloudy blackish lines from costa beyond middle to ¾ of inner margin, acutely angulated outwards above middle; a very irregular somewhat curved cloudy blackish line from ⅘ of costa to anal angle: cilia light grey irrorated with white, basal half irrorated with black. Hindwings and cilia in ♂ whitish-grey, in ♀ somewhat darker.

Sydney, New South Wales; in October, three specimens.

20. Nola, Leach.

Face with projecting scales; tongue absent. Antennæ in ♂ unequally bipectinated, towards apex simple, basal joint somewhat tufted. Palpi moderate, porrected or ascending, loosely rough-scaled beneath, terminal joint rather short, obtuse. Forewings with tufts of scales on surface; 2 from about $\frac{4}{5}$, 7 out of 8 near base, 9 and 10 out of 8. Hindwings with veins 3 and 4 stalked, 6 and 7 stalked, 8 from before middle.

54. *Nol. lugens*, Walk.

(*Uraba lugens*, Walk. Tort. 449; *Coesa viduella*, ib. Suppl. 1729; *Toxoloma australe*, Feld., Reis. Nov. pl. C, 16.)

♂ ♀. 23-26 mm. Head, palpi, antennæ, thorax, and legs dark fuscous, irrorated with white. Abdomen grey. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded; fuscous irregularly irrorated with dark fuscous and whitish; a fine black anteriorly whitish-edged line from $\frac{1}{3}$ of costa to middle of inner margin, rather curved, slightly indented above middle and near inner margin; a slightly curved cloudy black streak from middle of costa to $\frac{2}{3}$ of inner margin, followed by an additional tuft in disc; a fine blackish posteriorly obscurely whitish-edged line from $\frac{3}{5}$ of costa to inner margin before anal angle, somewhat indented outwards in middle and near inner margin; an obscure cloudy fuscous sinuate line from $\frac{2}{3}$ of costa to anal angle, often obsolete; three darker fuscous dots on costa posteriorly; an irregular twice strongly sinuate partially interrupted cloudy dark fuscous line from costa near apex to anal angle: cilia fuscous irrorated with white. Hindwings and cilia fuscous-grey, with a darker hindmarginal line.

Cooktown, Queensland; Melbourne, Victoria; Mount Lofty, South Australia; several specimens.

55. *Nol. metallopa*, n. sp.

♂. 19 mm. Head white, with a few fuscous scales. Palpi fuscous. Antennæ whitish. Thorax fuscous, mixed with white and dark fuscous. Abdomen whitish-grey. Legs fuscous, posterior pair whitish. Forewings triangular, costa moderately arched, apex obtuse, hindmargin almost straight, rather oblique; white, partially irregularly suffused with whitish-fuscous; a metallic brassy-fuscous triangular spot on costa near base; two very fine irregular somewhat curved dark fuscous lines, first from ⅓ of costa to middle of inner margin, second from beyond middle of costa to ⅘ of inner margin, included space suffused with metallic brassy-fuscous, darker towards costa, and with a cloudy blackish-fuscous irregular median streak becoming obsolete beneath; a fine irregular fuscous line from ¾ of costa to anal angle, angulated above middle; a hindmarginal row of fuscous dots: cilia fuscous, irrorated with white. Hindwings and cilia light grey.

Sydney, New South Wales; also from Victoria; in September and March; two specimens taken by Mr. G. H. Raynor. Closely allied to the European *N. albula*, Hb.

21. MOSODA, Walk.

Tongue well-developed. Antennæ in ♂ serrate, moderately strongly ciliated (1-1½). Palpi moderate, arched, ascending, filiform or somewhat rough-scaled beneath, terminal joint moderate or short, tolerably pointed. Forewings with vein 2 from ¾, 3 and 4 separate or rarely stalked, 8 and 9 out of 7. Hindwings with vein 4 absent, 6 and 7 stalked, 8 from ⅓.

A. Hindwings with postmedian darker fascia.
    a. Thorax anteriorly blackish....................59. *ophiodes.*
    b. „ „ white.......................60. *sejuncta.*
B. Hindwings without postmedian fascia.
    a. Hindwings grey................................61. *servilis.*
    b. „ yellow.
        1. Forewings yellow..........................56. *jucunda.*
        2. „ dark fuscous.
            i. Basal joint of palpi black...............58. *consolatrix.*
            ii. „ „ „ whitish-ochreous..57. *anartoides.*

Sect. A. Forewings with veins 3 and 4 stalked.

56. *Mos. jucunda*, Walk.

(*Pallene jucunda*, Walk. Bomb. 543; *Tospitis transitana*, ib. Tort. 430).

♂ ♀. 16-19 mm. Head, palpi, and antennæ ochreous-yellow. Thorax ochreous-yellow, posterior half black. Abdomen dark fuscous, apex and undersurface yellow. Legs ochreous-yellow, anterior pair and all tarsi suffused with dark fuscous above. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin oblique, nearly straight; ochreous-yellow; base narrowly black; two narrow somewhat irregular nearly straight black fasciæ, first from $\frac{1}{3}$ of costa to middle of inner margin, second from $\frac{3}{4}$ of costa to anal angle: cilia ochreous-yellow, with a small grey spot on anal angle. Hindwings light ochreous-yellow; a moderate blackish hindmarginal fascia, on upper half leaving a slender marginal streak of groundcolour, attenuated near anal angle: cilia pale ochreous-yellow, on lower half of hindmargin grey on basal half.

Duaringa and Gayndah, Queensland; Sydney, New South Wales; in November, not uncommon.

Sect. B. Forewings with veins 3 and 4 separate.

57. *Mos. anartoides*, Walk.

(*Mosoda anartoides*, Walk. Suppl. 1900.)

♂ ♀. 22-24 mm. Head black, slightly mixed with whitish-ochreous. Antennæ black, basal joint with a whitish-ochreous posterior spot. Abdomen black, anal tuft light yellow-ochreous. Legs dark fuscous ringed with whitish-ochreous, posterior tibiæ whitish-ochreous. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; blackish-fuscous, thinly sprinkled with ochreous-whitish; three very irregularly dentate transverse lines formed by a denser ochreous-whitish irroration, margins appearing darker through absence of irroration first before $\frac{1}{4}$, second from $\frac{2}{5}$ of costa to middle of inner margin, third from a small ochreous-white spot on costa at $\frac{3}{4}$ to anal angle; a small ochreous-white discal spot at $\frac{2}{3}$; an ochreous-white dot on costa before apex, a small spot with dot on each side on hindmargin above middle, and a small spot beneath which are two dots on hindmargin below middle : cilia blackish, with slender ochreous-white bars, tips suffused with whitish-ochreous. Hindwings bright orange; a very irregular black hindmarginal fascia, forming a moderately large irregular spot at apex and another above anal angle, connected on middle of hindmargin by a slender line only ; cilia blackish.

Larva feeds on lichens on rock-faces.

Sydney, New South Wales; common in August, at rest on rocks.

58, *Mos. consolatrix*, Ros.

(*Mosoda consolatrix*, Ros. Ann. Mag. N.H. 1885, 381.)

♂ ♀. 21-25 mm. Differs from *M. anartoides* only as follows: Head with sides and front of crown whitish. Palpi wholly black. Patagia white towards apex. Forewings somewhat lighter, ochreous-whitish lines more pronounced, especially second towards costa. Hindwings with lower black spot of hindmargin reduced to a thin marginal streak.

Bathurst (2,300 feet) and Mount Kosciusko (4,700 feet), New South Wales; also from Victoria; in November and January, several specimens.

59. *Mos. ophiodes*, n. sp.

♂. 25 mm. Head ochreous-whitish. Palpi black. (Antennæ broken.) Thorax blackish, posterior half suffusedly ochreous-whitish. Abdomen ochreous-yellowish. Legs black, banded with whitish-ochreous, posterior pair yellowish. Forewings elongate-triangular, costa moderately arched, slightly sinuate, apex rounded, hindmargin obliquely rounded; white, with a few minute scattered black scales; two straight subdentate cloudy blackish lines towards base, not reaching inner margin; first and second lines thick, dentate, black, included space suffused with blackish except an 8-shaped whitish black-margined discal spot, followed by a small white spot; first from $\frac{3}{5}$ of costa to $\frac{3}{5}$ of inner margin, irregularly sinuate; second from $\frac{2}{3}$ of costa to $\frac{4}{5}$ of inner margin, irregular, forming a broadly quadrangular bend outwards above middle, beneath parallel to first; a cloudy blackish dentate subterminal line, widely interrupted above and below middle: cilia whitish-ochreous, closely barred with blackish, bars becoming obsolete towards anal angle. Hindwings ochreous-yellow; apex and a cloudy line at $\frac{3}{4}$ parallel to hindmargin dark fuscous; cilia light yellow-ochreous, towards apex dark fuscous at base.

Victoria; one specimen (Coll. Lucas.)

60. *Mos. sejuncta*, Feld.

(*Pitane sejuncta*, Feld., Reis. Nov. pl. CXL, 24.)

♂ ♀. 16-17 mm. Head white. Palpi and antennæ black. Thorax white, patagia and a central transverse stripe dark fuscous. Abdomen dark fuscous, anal tuft whitish-ochreous. Legs whitish-ochreous; anterior pair dark fuscous above. Forewings elongate-triangular, costa rather strongly arched, apex obtuse, hindmargin oblique, hardly rounded; rather dark brown; a rather broad straight ochreous-white fascia about $\frac{1}{4}$, slightly dilated beneath; a narrow irregular ochreous-white fascia from $\frac{2}{3}$ of costa to $\frac{3}{4}$ of inner margin, dilated towards costa, rather indented inwards above and below middle; a small oblique white discal spot preceding and often connected with second fascia; sometimes a white suffusion forming a hindmarginal fascia: cilia whitish-ochreous, with a fuscous spot at apex and another on middle of hindmargin. Hindwings in ♂ with a subcostal furrow; whitish-ochreous; two cloudy fuscous parallel fasciæ, first rather narrow, somewhat beyond middle, second broader, hindmarginal, interrupted above anal angle; cilia whitish-ochreous, round apex and on a spot above middle light fuscous.

Sydney, New South Wales; also from Victoria; from May to August, in October, November, and March; common.

61. *Mos. servilis*, n sp.

♂. 16-20 mm. Head and thorax grey sprinkled with white, thorax with a white posterior spot. Palpi and antennæ dark fuscous. Abdomen whitish-ochreous, towards base greyish. Legs dark grey, ringed with whitish, posterior pair whitish. Forewings very elongate-triangular, costa moderately arched, apex rounded, hindmargin very obliquely rounded ; grey, irrorated with white, sometimes wholly suffused with white except basal patch and median band ; three blackish very irregular dentate transverse lines ; first near base, margined posteriorly with white ; second from $\frac{1}{3}$ of costa to $\frac{1}{3}$ of inner margin, margined anteriorly with white ; third from $\frac{3}{5}$ of costa to beneath costa at $\frac{4}{5}$, thence bent parallel to hindmargin, below middle with a very long acute indentation, running to inner margin at $\frac{3}{4}$; a white tranverse discal spot at $\frac{2}{3}$; a white hindmarginal line : cilia dark fuscous barred with white, becoming whitish towards tips. Hindwings and cilia light grey.

Toowoomba (2,000 feet), Queensland ; Sydney, New South Wales ; Melbourne, Victoria ; in October and December, at rest on tree-trunks ; five specimens.

22. SCAEODORA, n.g.

Tongue well-developed. Antennæ in ♂ filiform, moderately ciliated (1). Palpi moderate, somewhat ascending, filiform, terminal joint short, pointed. Forewings with vein 2 from beyond middle, 7 and 8 stalked, 9 and 10 stalked. Hindwings with veins 6 and 7 long-stalked, 8 from immediately before transverse vein.

62. *Scae. omophanes*, n. sp.

♂. 14 mm. Head, palpi, antennæ, thorax, abdomen, and legs light reddish-fuscous, with a few whitish scales. Forewings elongate-triangular, costa slightly arched, apex obtuse, hindmargin rather obliquely rounded ; light reddish-fuscous, thinly scaled ; base darker ; a dark fuscous somewhat curved line from about $\frac{1}{3}$ of costa to middle of inner margin ; a small transverse dark fuscous discal spot at $\frac{3}{5}$; a dark fuscous line from $\frac{3}{4}$ of costa to $\frac{3}{4}$ of inner margin, slightly angulated in middle, somewhat sinuate on upper half; cilia light reddish-fuscous, barred with dark fuscous. Hindwings and cilia light fulvous, thinly scaled.

Melbourne, Victoria; one specimen, in poor condition (Coll. Lucas).

23. CHIRIPHE, Walk.

Tongue well-developed. Antennæ in ♂ filiform, strongly ciliated ($1\frac{1}{2}$-2). Palpi moderate, loosely scaled, somewhat ascending, terminal joint moderate, pointed. Forewing with vein 2 from $\frac{2}{3}$, 4 and 5 stalked, 8 and 9 out of 7, 10 out of 7 or separate or absent. Hindwings with veins 3 and 4 stalked, 5 separate or out of 3, 6 and 7 stalked, 8 from middle.

A. Hindwings with darker hindmarginal band..65. *procrena.*
B. Hindwings without darker hindmarginal band.
a. Forewings with complex transverse lines.
1. Second bar from inner margin reaching costa........................68. *dictyota.*
2. Second bar from inner margin not reaching costa........................67. *dichotoma.*
b. Forewings without complex lines.
1. Forewings with two white fasciæ.
i. Face and palpi fuscous.............64. *catarrhoa.*
ii. „ „ whitish.............63. *stenopa.*
2. Forewings with a single posterior fascia...................................66. *monogrammaria.*

63. *Chir. stenopa*, n. sp.

♂. 17 mm. Head and palpi dull whitish. Antennæ pale fuscous. Thorax fuscous, becoming whitish behind. Abdomen grey. Legs whitish, anterior and middle pair fuscous above. Forewings elongate, suboblong, slightly dilated, costa gently arched, apex rounded, hindmargin rather obliquely rounded; fuscous, irregularly irrorated with white; two very irregular moderately broad white fasciæ, margined with dark fuscous; first from $\frac{1}{3}$ of costa to $\frac{2}{5}$ of inner margin, shortly curved inwards below middle; second from $\frac{2}{3}$ of costa to $\frac{4}{5}$ of inner margin, inner edge with a bidentate indentation in middle and a bidentate projection beneath it, outer edge tolerably straight; a whitish apical spot, and another on hindmargin above middle, tending to coalesce: cilia whitish, base spotted with fuscous; vein 10 absent. Hindwings pale brownish, towards base tinged with whitish-ochreous; cilia whitish; veins 4 and 5 out of 3, 6 and 7 very long-stalked.

Albany, West Australia; one specimen (Australian Museum).

64. *Chir. catarrhoa*, n. sp.

♂. 14 mm. Head white, face, palpi, and antennæ fuscous. Thorax fuscous, with a white anterior spot. Abdomen fuscous, sprinkled with whitish-ochreous. Forewings rather elongate-triangular, costa slightly arched, apex rounded, hindmargin rather oblique, slightly rounded; fuscous, thinly irrorated with white; an outwards-curved transverse whitish line rather near base, tending to be suffused into first fascia; a narrow straight white fascia from $\frac{2}{5}$ of costa to $\frac{2}{5}$ of inner margin, anterior edge suffused, posterior edge subdentate, margined with darker fuscous; a somewhat broader white dark-margined fascia from $\frac{3}{4}$ of costa to inner margin before anal angle, irregular, somewhat inwards-curved, forming two abrupt rounded projections inwards above and below middle, central portion tridentate: cilia white, barred with fuscous; vein 10 separate. Hindwings fulvous; cilia whitish, obscurely barred with pale fulvous; vein 5 separate.

Albany, West Australia; one specimen (Australian Museum).

65. *Chir. procrena*, n. sp.

♂. 15-16 mm. Head ochreous-white, centre of crown greyish-tinged, face, palpi, and antennæ dark fuscous. Thorax dark fuscous, collar and anterior and posterior almost confluent spots suffusedly white. Abdomen dark grey, anal tuft yellowish. Legs dark grey, posterior pair yellowish. Forewings elongate-triangular, costa slightly arched, apex obtuse, hindmargin obliquely rounded; dark fuscous, towards inner and hind margins irregularly irrorated with white; a moderate somewhat irregular downwards-curved white streak from middle of base to middle of costa, connected with costa at ¼ by an inwardly oblique bar; a slender irregular white fascia from ¾ of costa to ¾ of inner margin, dilated into a spot on costa, indented above middle and near inner margin, and with a projection inwards above middle containing a dark fuscous dot; the white irroration tends to form an indistinct spot on middle of hindmargin and another above anal angle: cilia pale whitish-fuscous, basal half dark fuscous barred with white; vein 10 separate. Hindwings orange; a rather dark greyish-fuscous moderately broad hindmarginal band, rather narrowed beneath; cilia ochrecus-grey-whitish, basal half dark grey; vein 5 separate.

Deloraine, Tasmania; three specimens in December.

66. *Chir. monogrammaria*, Walk.

(*Chiriphe monogrammaria*, Walk. Geom. 1692.)

♂ ♀. 13-20 mm. Head, thorax, and abdomen fulvous, head, collar, and anal tuft sometimes whitish. Palpi, antennæ, and legs dark grey, posterior legs whitish-ochreous. Forewings elongate-triangular, costa slightly arched, apex obtuse, hindmargin rather obliquely rounded; fulvous; a somewhat irregular straight white line from ¾ of costa to inner margin before anal angle: cilia fulvous, tips often whitish; vein 10 separate or out of 7. Hindwings and cilia fulvous; vein 5 separate.

Glen Innes (3,000 feet) and Sydney, New South Wales; from August to January, in March, and May; common, frequenting pastures, flying in the afternoon sun.

67. *Chir. dichotoma*, n. sp.

♂ ♀. 14-16 mm. Head white. Palpi and antennæ dark fuscous. Thorax white, patagia and posterior margin dark fuscous. Abdomen grey, anal tuft whitish-ochreous. Legs white, anterior pair dark fuscous internally. Forewings elongate, moderately dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; white, markings rather dark fuscous; a streak along basal fourth of costa, extending at base to inner margin and produced shortly along it; a sinuate streak from costa beyond middle to $\frac{2}{5}$ of inner margin, connected in disc by a bar with apex of costal streak; a short erect streak from inner margin at $\frac{2}{3}$, not reaching half across wing; a nearly straight streak from costa before apex to anal angle, connected in disc by a bar with costal extremity of first transverse streak, and confluent at apex with an irregular streak along upper $\frac{2}{3}$ of hindmargin: cilia white; vein 10 separate. Hindwings and cilia fulvous; vein 5 separate.

Sydney, New South Wales; also from Victoria; three specimens.

68. *Chir. dictyota*, n. sp.

♂. 14 mm. Head whitish-ochreous. Palpi and antennæ dark fuscous. Thorax whitish-ochreous, patagia and posterior margin dark fuscous. Abdomen ochreous-whitish. Legs whitish-ochreous, anterior pair dark fuscous internally. Forewings elongate, moderately dilated, costa gently arched, apex obtuse, hindmargin obliquely rounded; ochreous-white; markings blackish; a streak along basal third of costa, near apex toothed beneath, extending at base to inner margin and produced shortly along it; a rather irregular sinuate streak from beyond middle of costa to $\frac{2}{5}$ of inner margin, confluent on costa with a second streak which is sharply angulated outwards on median third and runs to inner margin at $\frac{2}{3}$; a nearly straight rather irregular streak from costa before apex to anal angle, touching angulation of second transverse streak, confluent at apex with an irregular streak along upper $\frac{2}{3}$ of hindmargin: cilia ochreous-white; vein 10 separate. Hindwings rather light fuscous-grey, towards base tinged with whitish-ochreous; cilia whitish-ochreous; vein 5 separate.

Toowoomba (2,000 feet), Queensland; one specimen in December.

24. HESTIARCHA, n. g.

Tongue rudimentary. Antennæ in ♂ moderately bipectinated throughout. Palpi very short, filiform, drooping. Forewings with vein 2 from ¾, 3 and 4 stalked, 5 and 6 absent, 7 and 8 out of 9. Hindwings with veins 4, 5, 6, and transverse vein absent.

69. *Hest. pyrrhopa*, n. sp.

♂. 13-15 mm. Head, palpi, antennæ, thorax, abdomen, and legs ochreous-brown. Forewings very elongate-triangular, costa hardly arched, apex rounded, hindmargin obliquely rounded; wholly ochreous-brown. Hindwings bright orange; a rather narrow dark fuscous hindmarginal band; cilia dark fuscous.

Port Lincoln, South Australia; four specimens in November.

25. THALLARCHA, n. g.

Tongue well-developed. Antennæ in ♂ moderately bipectinated throughout. Palpi moderate, slender, ascending, with appressed scales, terminal joint moderate, somewhat pointed. Forewings with vein 2 from middle, 8 and 9 out of 7. Hindwings with veins 6 and 7 stalked, 8 from middle.

A. Forewings ochreous-yellow........................73. *chrysochares.*
B. „ not „
  a. Hindwings with grey discal dot.............72. *albicollis.*
  b. „ without discal dot.
    1. Collar white................................71. *phaedropa.*
    2. „ dark fuscous........................70. *phalarota.*

70. *Thall. phalarota*, n. sp.

♂. 16-18 mm. Head ochreous-white, face, palpi, antennæ, thorax, and abdomen dark fuscous, anal tuft yellowish. Legs dark fuscous, ringed with yellowish, posterior pair pale yellowish. Forewings elongate-triangular, costa somewhat sinuate, posteriorly moderately arched, apex rounded, hindmargin obliquely rounded;

dark fuscous; an ochreous-white moderately broad transverse spot from inner margin at $\frac{1}{4}$, reaching $\frac{2}{3}$ across wing; a rather narrow somewhat inwards-curved white fascia from $\frac{3}{5}$ of costa to $\frac{3}{4}$ of inner margin, more or less interrupted in middle: cilia dark fuscous, a dot above apex and a moderately broad space beneath apex white. Hindwings bright orange; a dark fuscous triangular apical blotch, connected with a slender dark fuscous streak along hindmargin to anal angle; cilia dark fuscous.

Sydney, New South Wales; Beechworth, Victoria; in August, November, and March, four specimens.

71. *Thall. phaedropa*, n. sp.

♀. 14-16 mm. Head and collar white, face, palpi, antennæ, and thorax dark fuscous. Abdomen yellowish, mixed with dark fuscous. Legs dark fuscous ringed with yellowish, posterior pair yellowish. Forewings elongate-triangular, costa gently arched, apex round-pointed, hindmargin somewhat sinuate, oblique; dark fuscous; a broad white fascia from inner margin about $\frac{1}{4}$, not reaching costa, upper side near and parallel to it; a moderately broad somewhat inwards-curved white fascia from $\frac{3}{4}$ of costa to anal angle, outer edge broadly indented and sometimes interrupted in middle; a small inwardly oblique triangular white spot on costa before apex; a small elongate white spot on hindmargin above middle: cilia dark fuscous, with white spots above apex and above anal angle, and a white space below apex. Hindwings orange, with a triangular dark fuscous apical blotch; cilia dark fuscous.

Sydney, New South Wales; two specimens in October.

72. *Thall. albicollis*, Feld.

(*Pitane albicollis*, Feld., Reis. Nov. pl. CXL, 37.)

♂. 19-22 mm. Head white, lower half of face and palpi dark fuscous. Antennæ fuscous. Thorax dark fuscous, collar, an anterior dorsal spot, and apex of patagia white. Abdomen pale ochreous-yellow. Legs dark fuscous, posterior pair yellowish. Forewings elongate, suboblong, somewhat dilated, costa moderately arched, apex round-pointed, hindmargin straight, rather strongly oblique; white; a dark fuscous dot on base of costa; a narrow somewhat outwards-curved dark fuscous fascia from $\frac{1}{3}$ of costa to $\frac{2}{5}$ of inner margin, and a narrow inwards-curved ochreous-brown fascia from middle of costa to beyond middle of inner margin, touching in disc; a suboval transverse dark fuscous spot in disc at $\frac{4}{5}$, connected with costa at $\frac{3}{4}$ and inner margin before anal angle by fine dark fuscous lines, followed by a narrow cloudy white line, beyond which the apical space is wholly dark fuscous, except a short oblique narrow white apical spot, and a small white spot on hindmargin below middle: cilia dark fuscous, white opposite white markings. Hindwings light ochreous-yellow; a discal dot at $\frac{2}{3}$ and a small apical spot grey; cilia pale ochreous-yellow.

Sydney, New South Wales; Mount Lofty, South Australia; three specimens.

73. *Thall. chrysochares*, n. sp.

♂. 17 mm. Head deep ochreous-yellow, face, palpi, and antennæ dark fuscous. Thorax blackish, collar, an anterior dorsal spot, and apex of patagia ochreous-yellow. Abdomen dark fuscous, anal tuft ochreous-yellow. Legs dark fuscous, posterior pair ochreous-yellow. Forewings elongate, somewhat dilated, costa slightly arched, apex obtuse, hindmargin rounded, rather strongly oblique; deep ochreous-yellow; a small black spot on base of costa; a rather narrow black fascia from before middle of costa to beyond middle of inner margin, anterior edge with a short tooth near inner margin; apical space beyond a straight line from $\frac{2}{3}$ of costa to anal angle blackish, containing a small ochreous-yellow spot on costa near anterior edge, another at apex, and a third on middle of hindmargin: cilia dark fuscous, opposite spots ochreous-yellow. Hindwings ochreous-yellow; a cloudy dark fuscous discal dot at $\frac{3}{4}$; a rather narrow dark fuscous hindmarginal fascia, interrupted in middle; cilia dark fuscous, with a yellow spot on middle of hindmargin.

New South Wales; one specimen.

26. COMARCHIS, n. g.

Tongue well-developed. Antennæ in ♂ serrate or slenderly dentate, ciliated with fascicles, or filiform, evenly ciliated. Palpi moderate or rather short, porrected, slender, with appressed scales, terminal joint moderate, somewhat pointed. Forewings with vein 2 from middle, 8 and 9 out of 7. Hindwings with veins 6 and 7 stalked, 8 from middle.

A. Hindwings with a discal dot or spot.
  a. Costa of forewings without black streak...81. *sparsana.*
  b. „ „ with strong blackish streak towards base.
    1. Forewings without discal dot............80. *staurocola.*
    2. „ with separate black discal dot.
      i. Costal blackish streak reaching to middle ....74. *isophragma.*
      ii. Costal blackish streak not beyond $\frac{1}{4}$.
        *. Hindwings with hindmargin blackish to near anal angle ...75. *chrysochoa.*
        **. Hindwings with hindmargin not black below middle ....76. *jocularis.*
B. Hindwings without discal marking.
  a. Base of forewings narrowly dark fuscous...82. *aspectatella.*
  b. „ „ not „ „
    1. Thorax posteriorly black.................77. *tineoides.*
    2. „ „ white.
      i. Second fascia divided into two parallel lines ....79. *oblita.*
      ii. Second fascia entire ....78. *lochaga.*

Sect. A. Antennæ of ♂ slenderly dentate or serrate, ciliated with long fascicles.

74. *Com. isophragma*, n. sp.

♂ ♀. 22-23 mm. Head dark grey, sides of crown whitish-ochreous. Palpi dark grey, lower longitudinal half whitish-ochreous. Antennæ dark grey, towards base whitish-ochreous, in ♂ slenderly bidentate. Thorax dark grey mixed with white. Abdomen whitish-ochreous. Legs dark fuscous, posterior pair whitish-ochreous except base of tarsal joints. Forewings elongate, moderately dilated, costa gently arched, apex obtuse, hindmargin very obliquely rounded; white; markings blackish-grey; a broad costal streak from base to $\frac{2}{3}$, narrowed at base; a black dot in disc at $\frac{1}{4}$, touching this; a smaller black dot on fold obliquely before first, touching apex of a slender dorsal streak from base; lines white, subdentate, margined on both sides with blackish-grey, somewhat angulated outwards above middle; first from $\frac{2}{5}$ of costa to $\frac{2}{5}$ of inner margin, second from $\frac{4}{5}$ of costa to $\frac{4}{5}$ of inner margin, connected by a broad grey dorsal suffusion; outer margin of second forming a triangular spot on costa; a black discal dot at $\frac{2}{3}$; a narrow hindmarginal streak containing a series of white dots, with a slight suffused dilation beneath apex: cilia grey, becoming paler towards tips. Hindwings whitish-ochreous; a small oval discal spot at $\frac{2}{3}$, and a cloudy apical blotch touching it above grey; cilia whitish-ochreous.

Launceston, Tasmania; two specimens in November.

75. *Com. chrysochoa*, n. sp.

♂ ♀. 21-25 mm. Head black, front of crown white. Palpi black. Antennæ black, in ♂ slenderly bidentate. Thorax black, posterior margin of collar, a spot on each side of back, and apex of patagia ochreous-white. Abdomen ochreous-yellow, base blackish. Legs blackish, posterior tibiæ ochreous-yellow. Forewings very elongate-triangular, costa slightly arched, apex obtuse, hindmargin obliquely rounded; bright orange; a black costal streak from base to $\frac{1}{5}$, toothed at base; a slender irregular curved black fascia from apex of costal streak to $\frac{1}{4}$ of inner margin, attenuated and interrupted near inner margin; a narrow irregular slightly curved black fascia from before middle of costa to middle of inner margin, dilated into a triangular spot on costa; a small round discal spot at $\frac{2}{3}$; a black dot on costa at $\frac{2}{3}$; a short irregular erect black streak from inner margin before anal angle, more or less dilated above; a black apical blotch, its anterior edge running from $\frac{3}{4}$ of costa to anal angle, irregularly concave above and projecting below middle, more or less distinctly whitish-margined, containing a roundish white spot before apex and a somewhat double white spot before hindmargin in middle: cilia blackish with white spots above apex and on middle of hindmargin, and an orange spot below anal angle. Hindwings orange; a small black discal spot at $\frac{2}{3}$; a blackish hindmarginal fascia, moderately broad but attenuated beneath on upper half of hindmargin, very narrow on lower half and not reaching anal angle; cilia blackish, on anal angle and inner margin orange.

Mount Kosciusko (4,000-4,500 feet), New South Wales; in January, six specimens.

76. *Com. jocularis*, Ros.

(*Mosoda jocularis*, Ros., Ann. Mag. N.H. 1885, 381, pl. XI, 6.)

♂ ♀. 16-21 mm. Differs from *C. chrysochoa* only as follows: Antennæ of ♂ triangularly serrate. Forewings ochreous-yellow or whitish-ochreous, inner margin more orange; erect streak before anal angle not nearly reaching inner margin; spots of apex and hindmargin and of cilia light ochreous-yellow. Hindwings with hindmarginal fascia not extending along lower half of hindmargin.

Sydney and Bathurst, New South Wales; in June, August, September, November, and March, common; appears to frequent *Acacia decurrens.*

77. *Com. tineoides*, Feld.

(*Eutane tineoides*, Feld., Reis. Nov. pl. CVI, 15; *Pitane amanda* ib. pl. CXL, 36.)

♀. 18 mm. Head yellowish-white, face, palpi, and antennæ dark fuscous. Thorax dark fuscous, collar and extreme apex of patagia yellowish-white. Abdomen light yellowish, segments grey towards base. Legs pale yellowish, anterior pair dark fuscous internally. Forewings very elongate-triangular, costa gently arched, apex obtuse, hindmargin obliquely rounded; whitish-ochreous, yellowish-tinged; markings blackish-fuscous; a slender streak along basal fourth of costa; a slender fascia from apex of this to $\frac{1}{3}$ of inner margin, finely attenuated near inner margin; a moderate rather irregular straight fascia from middle of costa to beyond middle of inner margin; a similar rather broader fascia from $\frac{3}{4}$ of costa to anal angle, connected above middle by a thick bar with an elongate spot on apical third of hindmargin: cilia white, opposite dark markings dark fuscous. Hindwings ochreous-yellow; a dark grey apical spot, reaching to near middle of hindmargin; cilia ochreous-yellow, towards apex dark grey.

Bathurst, New South Wales; Melbourne, Victoria; in November, three specimens.

78. *Com. lochaga*, n. sp.

♀. 21 mm. Head white, face, palpi, and antennæ dark fuscous. Thorax white, with a blackish transverse median band. Abdomen whitish-ochreous. Legs grey, posterior pair whitish-ochreous. Forewings very elongate-triangular, costa gently arched, apex obtuse, hindmargin obliquely rounded; ochreous-white; costal edge very slenderly dark fuscous towards base; markings dark fuscous; a narrow somewhat curved fascia from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin; a moderate somewhat irregular fascia from middle of costa to $\frac{2}{3}$ of inner margin, mixed with ochreous below middle, connected with first fascia in disc by a broad whitish-ochreous bar; a moderate somewhat irregular fascia from $\frac{4}{5}$ of costa to hindmargin above anal angle, connected above middle by a thick bar with an elongate spot on apical third of hindmargin: cilia white, on dark markings grey on basal half. Hindwings whitish-ochreous; a grey apical spot; cilia whitish-ochreous.

Sydney, New South Wales; one specimen in October.

79. *Com. oblita*, Feld.

(*Pitane oblita*, Feld. Reis. Nov. pl. CXL, 23.)

♂ ♀. 21-23. Head white, face more or less fuscous. Palpi dark fuscous. Antennæ dark fuscous, in ♂ slenderly bidentate. Thorax white, with a blackish transverse irregular median band. Abdomen whitish-ochreous, anal tuft ochreous-yellow. Legs dark grey, posterior pair pale ochreous-yellowish. Forewings very elongate-triangular, costa gently arched, apex obtuse, hindmargin slightly rounded, oblique; ochreous-white; costal edge slenderly black towards base; an irregular curved slender black fascia from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin, sometimes not reaching inner margin; two parallel approximated somewhat irregular straight blackish lines from about middle of costa to beyond middle of inner margin, second dilated towards costa and broadly interrupted above middle; a deep yellow-ochreous oblong blotch in disc below middle, extending from first fascia to second of these lines; a black dot on costa before $\frac{3}{4}$; a very irregular narrow blackish fascia from $\frac{4}{5}$ of costa to hindmargin above anal angle, almost or quite interrupted below costa, where it forms a triangular spot, projecting inwards below middle, connected above middle by a bar with an elongate spot on apical third of hindmargin: cilia whitish-ochreous, beneath apex rather broadly blackish towards base. Hindwings whitish-ochreous; a grey apical spot; cilia whitish-ochreous.

Mount Kosciusko (2,800-4,700 feet), New South Wales; in January, six specimens.

80. *Com. staurocola*, n. sp.

♂ ♀. 18-19 mm. Head white, face and palpi dark fuscous. Antennæ dark fuscous, in ♂ slenderly bidentate. Thorax white, with a dark fuscous transverse irregular median band. Abdomen whitish-ochreous, anal tuft ochreous-yellow. Legs dark fuscous, posterior pair yellowish. Forewings very elongate-triangular, costa gently arched, apex round-pointed, hindmargin almost straight, rather strongly oblique; white; a narrow dark fuscous streak along basal third of costa; a somewhat curved irregular dark fuscous line from apex of this to $\frac{1}{3}$ of inner margin; a moderate irregular inwards-curved fuscous fascia, mixed and margined with dark fuscous, from $\frac{2}{3}$ of costa to $\frac{3}{4}$ of inner margin, touching first transverse line in disc, posteriorly with a projection below middle; costa from first line to median fascia narrowly pale ochreous; a triangular dark fuscous spot on costa near apex, touching a trapezoidal dark fuscous blotch extending along hindmargin from below apex to above anal angle, and reaching inwards nearly to projection of median fascia: cilia fuscous, darker at base, above apex white, on anal angle whitish-ochreous. Hindwings whitish-ochreous; a discal dot at ⅔ and a small cloudy apical spot light grey; cilia whitish-ochreous.

Newcastle and Sydney, New South Wales; in September and October, four specimens.

81. *Com. sparsana*, Walk.

(*Conchylis sparsana*, Walk. Tort. 369; *Pallene gracilis*, Butl., Trans. Ent. Soc. Lond. 1877, 376.)

♂ ♀. 16-17 mm. Head white or ochreous-white, face and palpi dark fuscous. Antennæ whitish, in ♂ slenderly bidentate. Thorax black, collar, a small spot on each side of back, and apex of patagia white. Abdomen light ochreous-yellow. Legs dark fuscous, posterior pair pale yellowish. Forewings very elongate-triangular, costa gently arched, apex obtuse, hindmargin somewhat rounded, oblique; ochreous-white; markings blackish; a dot at base of costa; a dot near inner margin before middle; a series of three black dots from ¼ of costa to middle of median fascia; a slender rather irregular slightly inwards-curved fascia from middle of costa to beyond middle of inner margin, followed by a more or less distinct cloudy parallel almost confluent line; a transverse linear mark in disc at ¾, connected by a suffusion with an irregular somewhat outwards-curved series of dots from ¾ of costa to anal angle; an irregular suffused streak from costa near apex to middle of hindmargin, forming a spot on costa, attenuated beneath; a hindmarginal series of dots: cilia ochreous-white or whitish-ochreous. Hindwings light ochreous-yellow; a transverse-linear dot in disc at ⅔, and a small cloudy apical spot dark grey; cilia pale yellowish.

Queensland; Sydney, New South Wales; in September and October, rather common.

Sect. B. Antennæ of ♂ filiform, moderately and evenly ciliated.

82. *Com. aspectatella*, Walk.

(*Oecophora aspectatella* (*-alella*), Walk., Tin. 679; *Tinea oecophorella*, ib. Suppl. 1813.)

♂ ♀. 15-22 mm. Head white or ochreous-white. Palpi dark fuscous. Antennæ dark fuscous, more or less ringed with whitish-ochreous. Thorax dark fuscous, with anterior and posterior white spots. Abdomen pale ochreous-yellow. Legs dark fuscous, posterior pair pale ochreous-yellow. Forewings very elongate-triangular, costa gently arched, apex rounded, hindmargin obliquely rounded; white or ochreous-white; markings dark fuscous; a rather broad costal streak from base, variable in extent, sometimes short, sometimes reaching more or less completely to median fascia, at base expanded to inner margin; two irregular subdentate well-marked lines, first from middle of costa to before middle of inner margin, second from $\frac{3}{4}$ of costa to $\frac{2}{3}$ of inner margin, included space below a line from apex of first to middle of second more or less wholly filled with dark fuscous and yellow-ochreous variably mixed; a rather broad somewhat inwards-curved fascia from costa near apex to anal angle, anteriorly margined on upper half by second line, posteriorly more or less confluent with a sub-triangular spot on upper half of hindmargin: cilia white or ochreous-white, on anal angle dark fuscous, round apex barred with dark fuscous. Hindwings light ochreous yellow; a cloudy grey apical spot; cilia pale ochreous-yellow, round apex sometimes barred with grey.

Sydney and Mount Kosciusko (4,000 feet), New South Wales; also from Victoria; in January, four specimens.

27. ANESTIA, n. g.

Tongue rudimentary. Antennæ in ♂ moderately bipectinated throughout. Palpi very short, with appressed scales, somewhat pointed, porrected. Forewings with vein 2 from beyond middle, 7 and 8 stalked, 9 and 10 stalked. Hindwings with veins 6 and 7 stalked, 8 from middle.

83. *Anest. ombrophanes*, n. sp.

♂. 19-25 mm. Head whitish-ochreous, face more or less fuscous beneath. Palpi and antennæ dark fuscous. Thorax rather dark fuscous, with an anterior ochreous-whitish spot. Abdomen orange. Legs dark fuscous, posterior pair light ochreous-yellowish. Forewings very elongate-triangular, costa posteriorly gently arched, apex rounded, hindmargin very obliquely rounded; whitish, often suffused with fuscous except on median band; a suffused dark fuscous streak along basal half of costa; an irregular dark fuscous line from costa before middle to $\frac{2}{5}$ of inner margin; a round blackish dot in middle of disc; an irregular sinuate dark fuscous line from $\frac{3}{4}$ of costa to $\frac{3}{4}$ of inner margin, beyond which the hindmarginal area is usually fuscous with one or two obscure whitish subapical spots, more rarely white with two dots above middle of hindmargin and one below dark fuscous: cilia varying from fuscous to light ochreous-yellowish. Hindwings orange; a dark fuscous apical spot, connected with a slender dark fuscous streak along hindmargin to near anal angle; cilia pale orange, base mixed with dark fuscous.

Melbourne, Victoria; in October, four specimens.

28. EUTANE, Walk.

Tongue well-developed. Antennæ in ♂ filiform, shortly ciliated ($\frac{1}{2}$). Palpi short, porrected, with rough projecting scales beneath, terminal joint short, concealed. Thorax and femora hairy beneath. Forewings with vein 2 from $\frac{2}{3}$, 4 and 5 approximated at base, 8, 9, and 10 out of 7. Hindwings with veins 3 and 4 stalked, 6 and 7 stalked, 8 from middle.

84. *Eut. terminalis*, Walk.

(*Eutane terminalis*, Walk. Bomb. 531; *E. maculata*, Butl., Trans. Ent. Soc. Lond. 1877, 335.)

♂ ♀. 24-25 mm. Head orange. Palpi and antennæ black. Thorax black, anterior margin orange. Abdomen black, anal tuft orange. Legs black, coxæ and posterior tibiæ except apex orange.

Forewings very elongate-triangular, costa slightly arched, apex rounded, hindmargin obliquely rounded ; black ; markings orange ; a broad transverse spot near base, sometimes reaching inner margin and nearly costa ; two variable opposite spots about $\frac{1}{3}$, sometimes enlarged and confluent to form a rather broad fascia, sometimes very small or upper almost obsolete ; a moderate hardly curved fascia from $\frac{3}{5}$ of costa to $\frac{2}{3}$ of inner margin, attenuated on inner margin ; a hindmarginal band of three moderate spots, two upper often confluent on margin : cilia black. Hindwings orange ; a variable black border, sometimes moderately narrow, sometimes occupying half length of wing ; cilia black.

Larva feeds on lichen-dust on walls.

Maryborough, Queensland ; Newcastle and Sydney, New South Wales ; in September, October, January, and February, often very abundant, flying in sun near houses.

29. Asura, Walk.

Tongue well-developed. Antennæ in ♂ moderately bipectinated throughout. Palpi moderate or short, slender, ascending, loosely haired. Thorax and femora shortly hairy beneath. Forewings with vein 2 from $\frac{1}{2}$-$\frac{3}{4}$, 6 from point with 9 or separate, 7 and 8 out of 9, 11 anastomosing or connected by bar with 12. Hindwings with veins 6 and 7 stalked, 8 from $\frac{3}{4}$.

A. Hindwings towards base orange ....85. *lydia.*
B. „ „ black.
    a. Palpi and crown black ....86. *cervicalis.*
    b. „ „ orange ....87. *habrotis.*

85. *As. lydia*, Don.

(*Pitane lydia*, Don., Walk. Bomb. 532 ; *Asura gaudens*, ib. 485.)

♂ ♀. 19-24 mm. Head and palpi orange, space between antennæ dark fuscous. Antennæ, thorax, and abdomen blackish, collar and anal tuft orange. Legs blackish. Forewings elongate-triangular, costa gently arched, apex obtuse, hindmargin obliquely rounded; black; markings orange; a moderately broad transverse spot near base, sometimes reaching inner margin, and nearly costa; two variable opposite spots about $\frac{1}{4}$, sometimes touching margins; an elongate transverse spot in middle, rarely connected with inner margin; a slender irregular slightly curved fascia from $\frac{2}{3}$ of costa to $\frac{3}{4}$ of inner margin, more or less dilated above; a hindmarginal band of three moderate spots: cilia blackish. Hindwings orange; a moderately broad hindmarginal blackish band, sometimes considerably narrowed beneath; a moderate blackish fascia from costa before middle to anal angle, rarely absent; cilia blackish.

Queensland; Glen Innes (3,000 feet), Newcastle, Sydney, and Wollongong, New South Wales; Fernshaw, Victoria; from September to April, common.

86. *As. cervicalis*, Walk.

(*Asura cervicalis*, Walk. Bomb. 484.)

♂. 28-34 mm. Head, palpi, antennæ, and thorax black, face and collar orange. Abdomen black, with dorsal and lateral orange stripes. Legs blackish. Forewings very elongate-triangular, costa gently arched, apex rounded, hindmargin rounded, rather strongly oblique; blackish, with five moderate irregular orange spots; first towards base above inner margin; second above middle of disc; third above middle of inner margin; fourth in disc at $\frac{4}{5}$; fifth above anal angle, more or less bisected; cilia blackish. Hindwings blackish; a large transverse orange discal blotch in middle, nearly reaching middle of costa, and less nearly anal angle; cilia blackish.

Sydney, New South Wales (Mr. Masters states formerly common, but not of late years); Melbourne, Victoria; also from Tasmania; common.

87. *As. habrotis*, n. sp.

♂. 21 mm. Differs from *A. cervicalis* only as follows: Head, palpi, and abdomen wholly orange. Wings considerably narrower. Forewings with two median spots almost touching.

New South Wales; one specimen. May eventually prove to be a geographical form of the preceding species, but at present seems distinct.

30. METACRIAS, n.g.

Tongue obsolete. Antennæ in ♂ moderately bipectinated throughout. Palpi rather short, hairy, concealed in rough hairs of head. Thorax and femora densely hairy beneath. Anterior tibiæ with developed spine beneath and apical hook. Wings in ♀ rudimentary. Forewings with vein 2 from $\frac{2}{3}$, 6 from point with or out of 9, 7 and 8 out of 9, 10 sometimes connected with 9 at a point above 7. Hindwings with veins 3 and 4 almost from point, 6 and 7 from a point or short-stalked, 8 from $\frac{1}{3}$.

a. Forewings with a red streak from base
beneath costa ....89. *Huttonii.*

b. Forewings without a red streak from base
beneath costa.......................................88. *erichrysa.*

88. *Met. erichrysa*, n. sp.

♂. 31-33 mm. Head, palpi, antennæ, and thorax black; hairs beneath thorax and partly above tending to become pale grey towards tips. Abdomen black, marked with yellow on sides and sometimes beneath. Legs yellow-ochreous. Forewings elongate-triangular, costa straight, apex obtuse, hindmargin strongly rounded, rather oblique; vein 10 separate; black; markings orange-yellow; a slender costal streak, much dilated on basal fourth; a slender dorsal streak; a wedgeshaped discal spot before middle; a moderately broad streak along submedian fold from near base to $\frac{3}{4}$; a curved discal series of five elongate spots about $\frac{2}{3}$; a subterminal series of eight dots or small spots, more or less connected by fine longitudinal lines with hindmargin: cilia pale ochreous-yellow, basal half blackish. Hindwings orange-yellow; a curved black transverse discal spot; a moderate irregular-edged black hindmarginal band, on upper half containing three or four yellow dots, on lower half with an elongate orange-yellow marginal spot sending an acute projection to inner edge of band near anal angle; cilia pale ochreous-yellow, on upper half black at base

♀. Wholly whitish-ochreous; wings minute, aborted; legs short, stout, well-developed.

Larva wholly black; hairs black, those covering segmental incisions brownish-ochreous. Feeds on *Senecio bellidioides*, in January. Cocoon rather slight.

Mount Arthur (4,000 feet), New Zealand; five specimens taken and bred in January.

89. *Met. Huttonii*, Butl.

(*Phaos Huttonii*, Butl. Cist. Ent. ii, 487.)

♂. 29 mm. Differs from *M. erichrysa* only as follows: Head and thorax with some yellow-whitish hairs. Forewings with vein 10 connected with 9 at a point above 7; markings whitish-ochreous; no costal streak; a bright crimson subcostal streak from base to ⅓. Hindwings yellow, towards base mixed with blackish; spots in hindmarginal band reduced, supra-anal spot moderate, triangular, not reaching edge of band.

Lake Wakatipu, New Zealand; discovered by Prof. Hutton, who also observed the apterous ♀.

31. Spilosoma, Stph.

Tongue rudimentary. Antennæ in ♂ moderately bipectinated throughout, in ♀ also shortly bipectinated or serrate. Palpi moderate, porrected, with appressed scales or hairy beneath, terminal joint rather short, somewhat pointed. Thorax and femora densely hairy beneath. Anterior tibiæ with more or less developed spine beneath and apical hook. Forewings with vein 2 from middle, 6 from near or rarely out of 9, 7 and 8 out of 9, 10 out of 9 below 7. Hindwings with veins 4 and 5 rarely short-stalked, 6 and 7 from a point or approximated at base, 8 from ⅓.

The dark markings of all the species of this genus are very variable.

A. Hindwings rosy.
  a. Forewings with four moderate equidistant black costal spots ....92. *erythrastis.*
  b. Forewings without such spots..............91. *fuscinula.*
B. Hindwings not rosy.
  a. Hindwings yellow..............................90. *interfixa.*
  b. „ white.
    1. Thorax with dark fuscous stripes ...,...93. *fulvohirta.*
    2. „ wholly white ....94. *obliqua.*

90. *Spil. interfixa*, Walk.

(*Phaos interfixa*, Walk. Bomb. 627.)

♂. 28-30 mm. Head and palpi black mixed with ochreous-whitish. Antennæ black. Thorax black, anterior margin and central and lateral lines ochreous-whitish. Abdomen rosy-crimson, with transverse black spots above, beneath whitish with three rows of blackish spots. Legs whitish-ochreous, anterior femora rosy-tinged. Forewings very elongate-triangular, costa straight, apex obtuse, hindmargin obliquely rounded; whitish-ochreous; inner margin narrowly yellowish; a suffused rosy almost costal streak from base to $\frac{1}{3}$; lower median vein and branches, and vein 1 slenderly black; a slender blackish fascia before middle, not touching margins; a slender blackish fascia at $\frac{2}{3}$, upper half strongly curved outwards and interrupted by an oblong ochreous-yellow spot above middle, before which is a quadrate black spot; a moderate irregular-edged black fascia about $\frac{3}{4}$ parallel to hindmargin; a moderate black hindmarginal fascia, cut by a series of elongate whitish-ochreous spots not quite reaching hindmargin: cilia whitish-ochreous, basal half black. Hindwings ochreous-yellow, towards base and along costa suffusedly mixed with black; a quadrate black discal spot touching costal suffusion; branches of lower median vein sometimes black; a rather broad black hindmarginal band, containing a small ochreous-yellow mark on middle of hindmargin and a small spot above anal angle; cilia pale yellowish, basal half black; veins 4 and 5 short-stalked.

♀ with black markings of forewings much broader and more confluent; hindwings without spots in hindmarginal band.

var. ♂ with black markings of forewings broadly suffused and confluent, obscuring the groundcolour, which is reduced to a few very small spots; in this specimen veins 9 and 10 of forewings are entirely absent, and it is therefore probably to be regarded as a diseased and abnormal form.

Specially recognisable by the black base of cilia, and the yellow hindwings.

Tasmania; four specimens (Australian Museum).

91. *Spil. fuscinula*, Walk.

(*Arctia fuscinula*, Walk. Bomb. 616; ? *Phaos vigens*, Butl., Proc. Zool. Soc. Lond. 1878, 383; *P. nigriceps*, ib. 383; *P. notatum*, ib. 383; *P. nexum*, ib. 384; *P. lacteatum*, ib. 384.)

♂ ♀. 31-36 mm. Head whitish-ochreous or ochreous, sometimes fuscous-tinged. Palpi and antennæ blackish. Thorax whitish-ochreous, with more or less broad central and lateral blackish stripes from behind collar. Abdomen bright rosy, with dorsal and lateral series of blackish spots, beneath whitish-ochreous. Legs dark fuscous, femora rosy. Forewings triangular, more elongate in ♀, costa almost straight, apex obtuse, hindmargin rounded, in ♂ slightly, in ♀ moderately oblique; whitish-ochreous, sometimes fuscous-tinged; markings black, very variable; in lightest specimens basal fourth of costa, a small discal spot, an interrupted thick streak beneath central portion of lower median vein, and a broadly interrupted streak above vein 1 black; in darkest specimens also with disc up to $\frac{4}{5}$ wholly blackish, reaching costa and inner margin at $\frac{2}{3}$, and posterior and hindmarginal irregular sometimes confluent blackish fascia; all intermediate forms: cilia wholly whitish-ochreous, rarely fuscous-tinged. Hindwings light rosy; a roundish black discal spot; a black hindmarginal band, sometimes entire, sometimes reduced to three small bisected spots, with all intermediate forms: cilia whitish-ochreous; base rosy.

Distinguished from the preceding by the wholly whitish-ochreous cilia and rosy hindwings; the ♂ is distinctly the shortest-winged species relatively of the genus, but the difference is not noticeable in the ♀. Northern forms tend to be less strongly marked with black than southern.

Brisbane, Queensland; Newcastle and Sydney, New South Wales; Melbourne, Victoria; from August to October, in March and June; common.

92. *Spil. erythrastis*, n. sp.

♂. 42 mm. Head ochreous-whitish, face, palpi, and antennæ dark fuscous. Thorax ochreous-whitish, incisions of collar pale rosy, two spots on anterior margin, one on each patagium, and a dorsal stripe dark fuscous. Abdomen proportionately long, bright rosy, beneath ochreous-whitish, with a dorsal series of transverse black spots obsolete towards base, and double lateral series of small black spots. Legs fuscous, femora and middle and posterior tibiæ rosy above. Forewings rather elongate-triangular, costa anteriorly straight, arched towards apex, apex rounded, hindmargin obliquely rounded; clear ochreous-whitish; markings blackish-fuscous; five irregular transverse series of small spots, first four starting from moderate subtriangular spots on costa; first very near base; second about $\frac{1}{4}$, represented only by one spot beneath costal; third slightly beyond middle, abruptly curved outwards in disc, thrice interrupted; fourth about $\frac{3}{4}$, represented by a spot below costal spot and one on inner margin; fifth consisting of about eight dots, irregularly placed, not reaching costa: cilia ochreous-white, with five dark fuscous spots on lower $\frac{2}{3}$ of hindmargin. Hindwings bright rosy; a roundish black discal spot; a small blackish spot towards apex, and two transversely placed towards hindmargin above anal angle; cilia whitish, base whitish-ochreous. Undersurface of forewings suffused with bright rosy towards disc.

Specially characterised by the peculiar shape of wing and elongate abdomen; differs from *S. fuscinula*, the only other species with rosy hindwings, by the conspicuous equidistant costal spots, absence of costal basal streak and of median and submedian streaks, and by the dark spots of cilia.

Lizard Island, off Cape Flattery, Queensland; one specimen (Coll. Macleay).

93. *Spil. fulvohirta*, Walk.

(*Ardices fulvohirta*, Walk. Bomb. 710; *Spilosoma subocellatum*, ib. 1697; *S. conferta*, ib. Suppl. 295.)

♂ ♀. 46-63 mm. Head white, face blackish. Palpi rosy, base and apex fuscous. Antennæ blackish. Thorax white or ochreous-white, shoulders narrowly red, a short stripe on patagia and central more or less complete stripe dark fuscous. Abdomen yellow, ochreous-orange, or red, with dorsal row of large transverse black spots, and lateral rows of small spots, beneath whitish, sometimes banded with black, sometimes wholly black except reddish-white segmental margins. Legs dark fuscous, femora red. Forewings elongate-triangular, costa almost straight, apex obtuse, hindmargin rather obliquely rounded; white; markings fuscous, somewhat darker-margined; five variable irregular fasciæ, interrupted by white lines on veins, and an irregular sometimes interrupted dorsal streak from base to middle; first and second fasciæ angulated, sometimes suffused together and with third below middle; third from costa beyond middle to inner margin beyond middle, sinuate, containing a variable white spot above middle; fourth and fifth irregularly confluent above middle, fifth sometimes broken and confused, third and fourth sometimes confluent; sometimes a hindmarginal row of small spots: cilia white, partly barred with fuscous on basal half. Hindwings white; a roundish fuscous discal spot before middle; a variable subterminal fuscous fascia or series of spots; some scattered irregular fuscous dots on hindmargin; cilia white.

Very like the following in some forms, but always distinguished from it by the dark fuscous stripes of thorax.

Queensland; Sydney, New South Wales; Melbourne, Victoria; Tasmania; Albany, West Australia; common, in October.

94. *Spil. obliqua*, Walk.

(*Spilosoma obliqua*, Walk., Bomb. 679; *Ardices canescens*, Butl. Cist. Ent. ii, 29; *Spilarctia obliqua*, ib. 41.)

♂ ♀. 41-57 mm. Differs from *S. fulvohirta* only as follows: Thorax wholly white. Abdomen red, with small dorsal and lateral black spots, beneath white. Forewings with a black dot on base of costa; first fascia wholly absent; a discal dot beyond second; last three fasciæ reduced to a single fascia, furcate or trifurcate towards costa; some dots towards hindmargin in middle: cilia white, with two fuscous bars above middle, sometimes barred throughout with fuscous. Hindwings white; a small fuscous discal spot before middle; three fuscous spots towards hindmargin, first beneath apex, two above anal angle.

Sydney, New South Wales; Melbourne, Victoria; in September, common.

32. AREAS, Walk.

Tongue developed, rather short. Antennæ less than half forewings, in ♂ shortly bipectinated, pectinations obsolete towards base and apex. Palpi rather short, thickened with rough scales beneath, terminal joint short. Thorax hairy beneath. Anterior tibiæ with well-developed apical hook. Forewings with vein 2 from ¾, 4 and 5 from a point or stalked, 6 from very near or out of 9, 7 and 8 out of 9, 10 out of 9 below 7. Hindwings with veins 4 and 5 from a point or short-stalked, 6 and 7 from point or stalked, 8 from before middle.

Not having seen Walker's type of *Areas*, I have been compelled to rely on Mr. Butler's authority for the use of the name for this genus.

a. Thorax with two black spots........................96. *costalis*.
b. „ without „ „ ....95. *marginata*.

95. *Ar. marginata*, Don.

(*Phalæna marginata*, Don. Ins. N. H.; *Areas Moorei*, Butl., Cist. Ent. ii, 23, Ill. Het. V, 28, pl. LXXXV, 2; *A. roseicostis* ib., Cist. Ent. ii, 23.)

♂ ♀. 37-56 mm. Head and thorax white, incision of neck red. Palpi red, terminal joint black. Antennæ black. Abdomen red, with dorsal series of black transverse spots, and lateral series of small spots, beneath white with two series of black dots. Legs black, femora red, beneath white. Forewings very elongate-triangular, costa gently arched, apex obtuse, hindmargin rounded, rather strongly oblique; shining white; a very slender costal black streak from base to near apex, sometimes absent; a slender red streak beneath this from base almost to apex; a slender black streak along lower median vein from base to $\frac{2}{3}$, sometimes absent; sometimes a black dot beneath costa at $\frac{2}{3}$; a black elongate dot near hindmargin on vein 2 and another on vein 5, both variable and sometimes absent: cilia white. Hindwings shining white; a small black transverse discal median spot; four small irregular almost or quite marginal black spots, first above apex, fourth above anal angle: cilia white.

var. *a*. Head and thorax suffused with ochreous or rosy; forewings suffused with rosy or yellowish-tinged, a subcostal sometimes furcate black streak, median streak thicker, trifurcate or quadrifurcate, a subdorsal black streak: hindwings tinged or suffused with rosy, two lower marginal black spots sometimes connected with broad blackish longitudinal streaks nearly reaching base.

var. *β*. Forewings and hindwings wholly without black markings.

Varies much according to locality, but all the varieties are connected by intermediate forms and certainly identical, except perhaps var. *β*, which however I believe to be only an accidental sport. Generally speaking, it is only in the most Southern specimens that the black markings of the forewings are much developed; in going North they tend to disappear; at Sydney the normal form is that described as typical, whence a perfect series of geographical forms can be obtained leading to the Cooktown form, in which the black markings of the forewings are usually wholly absent; the single specimen of var. *β* was from Rockhampton.

Butler's figure of *A. Moorei* from India does not differ from the normal Cooktown form.

Cooktown, Duaringa, Rockhampton, Gayndah, and Brisbane, Queensland; Newcastle and Sydney, New South Wales; Melbourne and Warragul, Victoria; Port Lincoln, South Australia; common. Also from India.

96. *Ar. costalis*, Walk.

(*Aloa costalis*, Walk. Suppl. 301.)

♀. 45 mm. Head white, posterior margin red. Palpi reddish, apex dark fuscous. Antennæ blackish. Thorax white, posterior margin of collar red, patagia with black central spot. Abdomen red, beneath and at apex white, with a dorsal series of transverse blackish spots, and double lateral series of small black spots. Legs dark fuscous, beneath white, femora red above except at apex. Forewings very elongate-triangular, costa moderately arched, apex rounded, hindmargin very obliquely rounded; white; a narrow red costal streak; a small black spot beneath costa near base; a somewhat curved series of four black spots from $\frac{1}{4}$ of costa to $\frac{1}{3}$ of inner margin; two small black discal spots placed transversely beyond middle; a curved somewhat sinuate series of nine small confluent blackish spots from $\frac{3}{4}$ of costa to $\frac{3}{4}$ of inner margin; three small blackish spots between this and hindmargin, on costa, above middle, and at $\frac{3}{4}$; a hindmarginal series of small semioval confluent blackish spots: cilia white, base blackish. Hindwings white, base reddish-tinged; a blackish discal spot; a rather narrow blackish hindmarginal fascia, attenuated round apex, acutely indented below apex, in middle, and towards anal angle, median indentation bifurcate; cilia white, base blackish.

North Australia; one specimen (Coll. Macleay).

33. Deiopeia, Stph.

Tongue well-developed. Antennæ in ♂ filiform, shortly ciliated ($\frac{1}{2}$), with scattered longer cilia. Palpi moderate, arched, ascending, second joint thickened with dense loosely appressed scales, terminal joint moderate, cylindrical, obtuse. Spurs extremely short. Forewings with vein 2 from $\frac{3}{5}$, 7 and 8 out of 9. Hindwings with veins 6 and 7 approximated at base, 8 from middle.

97. *Deio. pulchella*, L.

♂ ♀. 33-36 mm. Head and thorax ochreous-whitish, spotted with black and orange. Palpi whitish, terminal joint black. Antennæ blackish. Abdomen white. Legs dark fuscous, posterior pair white. Forewings extremely elongate-triangular, costa slightly arched, apex obtuse, hindmargin rather obliquely rounded; ochreous-whitish; six angulated transverse series of black dots between veins, first subbasal, sixth hindmarginal, alternating with five series of two or three small subquadrate red spots, one of each series being costal; four additional black dots transversely placed in disc between fourth and fifth series: cilia white, terminal half barred with grey. Hindwings white; two almost connected small blackish discal spots on transverse veins; a narrow irregular blackish-grey hindmarginal band, dilated into a triangular blotch at apex, and an irregular quadrate smaller blotch below middle; cilia white, base dark grey.

Brisbane, Queensland; Newcastle and Sydney, New South Wales; Mount Lofty, South Australia; in September, March, and April, common, sometimes in abundance. Also from New Guinea, Philippines, Ceylon, India, Africa, and South Europe.

HYPSIDAE.

Ocelli present. Antennæ about $\frac{2}{3}$, not thickened. Maxillary palpi absent. Posterior tibiæ with spurs all present. Frenum developed. Forewings with 1 simple at base, 7, 8, and 9 stalked. Hindwings with 1c absent, 6 and 7 approximated at base or stalked, 8 anastomosing with upper margin of cell, separating towards base, or connected by a median bar only. Larvae 16-legged, uniformly clothed with fascicles of long hairs.

Differs essentially from the *Arctiadae* by vein 8 of the hindwings not coinciding completely with upper margin of cell towards base. The family is principally tropical, and only three Australian genera are strictly referable to it. At the end of these I have added the genus *Digama*, which is really allied to them, but differs essentially in having vein 8 of the hindwings approximated but not connected to the upper margin of cell; it cannot therefore be included in the family as defined, but may be regarded as an unattached genus for the present, until I obtain further material to constitute a family. All four genera are characteristically Indo-Malayan.

A. Hindwings with vein 8 anastomosing with margin of cell.
  a. Antennæ in ♂ filiform........................35. *Amerila.*
  b. ,, ,, more or less pectinated ...34. *Nyctemera.*
B. Hindwings with vein 8 connected with cell by a bar ....36. *Hypsa.*

From these *Digama* differs as mentioned above.

34. Nyctemera, Hb.

Tongue well-developed. Antennæ in ♂ more or less bipectinated throughout, sometimes shortly in ♀ also. Palpi moderately long, porrected or rather ascending, with appressed scales, terminal joint moderate, cylindrical. Forewings with 6 out of 9 or separate, 7 and 8 out of 9, 10 connected with 9 by a bar. Hindwings with 6 and 7 stalked or separate, 8 anastomosing shortly with margin of cell near base.

1. Hindwings yellow................................ 103. *cribraria.*
  ,, not ,, ... 2.
2. Forewings with white submarginal spots...... 102. *separata.*
  ,, without ,, ... 3.
3. Cilia of wings yellow-whitish except base..... 98. *amica.*
  ,, ,, wholly blackish.................. 4.
4. Hindwings with small white spot.............. 99. *annulata.*
  ,, ,, disc wholly white .... 5.
5. Fascia of forewings divided by black veins into six spots .... 100. *tertiana.*
  Fascia of forewings undivided .... 101. *crescens.*

98. *Nyct. amica*, White.

(*Agagles amicus*, White, Grey's Disc. 482; *Nyctemera annulata*, Walk. (nec Boisd.) Bomb. 391.)

♂ ♀. 35-39 mm. Head black, a spot on side of face and incision of neck orange. Palpi black, basal joint orange. Antennæ black, in ♂ rather strongly, in ♀ shortly pectinated. Thorax black, margin of collar and a stripe on each side of back meeting behind orange, margins of patagia whitish-ochreous. Abdomen orange, base of segments black, dilating into a dorsal spot. Legs blackish, beneath whitish-ochreous. Forewings rather elongate-triangular, costa posteriorly moderately arched, apex obtuse, hindmargin rather obliquely rounded; blackish; an orange basal dot beneath costa; veins sometimes marked with very fine yellow-whitish lines towards base; dorsal margin very slenderly yellowish-white from near base to middle; a moderately broad irregular-edged ochreous-white fascia from costa beyond middle towards anal angle, not reaching it, on costa blackish-edged, interrupted by a blackish line on lower median vein: cilia yellow-whitish or pale yellow, basal half black. Hindwings with veins 6 and 7 from a point; blackish; a moderate irregular ochreous-white spot beyond middle towards costa; cilia as in forewings.

Larva black; hairs spinose, black; spots large, shining; dorsal line red; lateral irregular, red, interrupted by a whitish spot on each segment; sometimes a series of obscure whitish spots about spiracles, and an interrupted dull red subspiracular line, both often nearly obsolete; head black. Feeds on various species of *Senecio*.

Newcastle and Sydney, New South Wales; Melbourne, Victoria; Mount Lofty, South Australia; in June, July, September, and November, generally common.

99. *Nyct. annulata*, Boisd.

(*Leptosoma annulatum*, Boisd. Voy. Astr. V, 197, pl. V, 9, Dbld. Dieff. N. Zeal. ii. 284; *Nyctemera Doubledayi*, Walk. Bomb. 392.)

♂ ♀. 38-42 mm. Differs from *N amica* only as follows: Head and patagia wholly black. Abdomen with black bands broader, not perceptibly dilated. Wings with white markings much smaller, sometimes almost wholly obsolete; no white lines on veins or inner margin; cilia wholly black.

Larva black; hairs black; spots large, indigo blue; dorsal and lateral lines narrow, irregular, reddish-orange; head black. Feeds on various species of *Senecio*, sometimes completely stripping the plants.

New Zealand, abundant throughout North and South Islands; according to Boisduval's original statement also from New Guinea, but I think this is probably an error, to be regarded as a *lapsus calami*; at least, it has never been confirmed.

100. *Nyct. tertiana*, Meyr.

(*Nyctemera tertiana*, Meyr., Ent. Mo. Mag. XXIII, 15; *N. latistriga*, Snell. (nec. Walk.), Tijd. v. Ent. 1878, 72, pl. VI, 6.)

♂ ♀. 42-48 mm. Differs from *N. crescens* only as follows; Abdominal segments with broader apical ochreous-yellow rings. Forewings dark fuscous, with all main veins and median and submedian folds yellow-whitish anteriorly; fascia divided by dark fuscous veins into six spots. Hindwings often (not always) with inner margin very broadly dark fuscous, so that the white is reduced to a large roundish discal blotch.

Cooktown, Queensland; ten specimens (Coll. Macleay and Lucas). Also from Celebes.

101. *Nyct. crescens*, Walk.

(*Nyctemera crescens*, Walk. Suppl. 204.)

♂ ♀. 39-44 mm. Head ochreous-yellow, with a large black spot on face and another on crown. Palpi dark fuscous, basal half yellowish. Antennæ dark fuscous, in ♂ rather strongly, in ♀ shortly pectinated. Thorax black, a stripe on each side of back and margins of collar and patagia ochreous-yellow. Abdomen blackish, all segments with apical white rings, becoming yellowish beneath, anal tuft ochreous-yellow. Legs blackish. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded; blackish; dorsal margin very narrowly yellowish-white from near base to $\frac{2}{3}$; vein 1 yellowish-white anteriorly; a moderately broad irregular-edged ochreous-white fascia from beyond middle of costa towards anal angle, not reaching it, on costa blackish-edged, anterior edge acutely indented in middle: cilia blackish. Hindwings with veins 6 and 7 stalked; white; costa narrowly grey; a moderately broad irregular-edged black hindmarginal band, semicircularly excavated towards middle; cilia blackish.

Cooktown and Cairns, Queensland; five specimens (Coll. Macleay and Lucas).

102. *Nyct. separata*, Walk.

(*Nyctemera separata,* Walk. Suppl. 204.)

♂ ♀. 40-44 mm. Head yellow-whitish, with a blackish spot on forehead and another on crown. Palpi dark fuscous, basal half pale yellowish. Antennæ dark fuscous, in ♂ with very short pectinations terminating in long cilia, in ♀ simply ciliated. Thorax whitish-yellow, with ten blackish spots. Abdomen white, segments grey towards base, anal tuft of ♂ yellowish. Legs grey. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded; rather light fuscous; dorsal edge very narrowly white; an irregular-edged white fascia from beyond middle of costa to before anal angle, rarely reaching inner margin, in one specimen reduced to a costal spot and three dots; two small sometimes confluent white spots towards apex, and a third towards hindmargin in middle: cilia pale fuscous. Hindwings with veins 6 and 7 from a point; white; an irregular moderate dark grey hindmarginal band, indented beneath apex, containing a small white almost apical spot, and a second (sometimes confluent with disc near middle of hindmargin; cilia grey.

Cape York, Cooktown, and Cairns, Queensland; seven specimens (Coll Macleay and Masters). Also from Aru and Ceram.

103. *Nyct. cribraria*, Cl.

(*Phalaena cribraria*, Cl.; *Noctua astrea*, Drury, Ins. Exot. ii., 11, pl. VI, 3; *Bombyx pylotis*, F.; *Xanthesthes guttata*, Ramb.; *Argina notata* Butl., Trans. Ent. Soc. Lond. 1877, 365.)

♂ ♀. 39-44 mm. Head and palpi ochreous-yellow, terminal joint black. Antennæ dark fuscous, in ♂ with very short pectinations terminating in long cilia, in ♀ simply ciliated. Thorax ochreous-yellow, with seven small black sometimes pale-margined spots. Abdomen deep ochreous-yellow, with dorsal, lateral, and ventral series of small black spots. Legs ochreous-yellow, anterior and middle pair dark fuscous above. Forewings rather elongate-triangular, costa gently arched, apex obtuse, hindmargin rather obliquely rounded; ochreous-yellow or light orange; five transverse irregular series of from six to nine small black spots, often surrounded with ochreous-whitish rings; first angulated, second and third sinuate, fourth and fifth curved, fifth hindmarginal except near apex; two similar spots near base, on costa and in middle; four similar spots in a transverse irregular row in disc between third and fourth series: cilia ochreous-yellow. Hindwings with veins 6 and 7 from a point, anal angle in ♂ produced into a short projection; orange-yellow, with seven or eight black spots; two or three in a median series, one in disc beyond middle, one towards inner margin at $\frac{2}{3}$, and three submarginal; three round black dots on hindmargin towards middle; a small black spot on anal projection; cilia yellow.

Cape York, Cooktown, Townsville, Duaringa, and Brisbane, Queensland; generally common towards the north. Also from China, Ceylon, India, Madagascar, Africa, probably throughout tropical regions of the Old World.

35. AMERILA, Walk.

Tongue well-developed. Antennæ in ♂ filiform, simple, with scattered short cilia. Palpi moderate, arched, ascending, with loosely appressed scales, basal joint rough beneath and somewhat tufted above, terminal joint moderate, cylindrical, obtuse. Tarsi spinose. Forewings in ♂ beneath often with a small pencil of hairs on vein 1 towards middle; 2 from $\frac{2}{3}$, 3, 4, and 5 approximated at base, 6 from near 9, 7 and 8 out of 9, 10 connected with 9 by bar. Hindwings in ♂ sometimes with several long spreading pencils of hair on inner margin; 3, 4, 5 approximated at base, 6 and 7 approximated at base, 8 anastomosing with upper margin of cell from near base to beyond middle.

A. Forewings with darker apical patch.
  a. Forewings with large white basal patch.. 105. *brachyleuca.*
  b. ,, without ,, ,, ...104. *astreas.*
B. Forewings without darker patch.
  a. Abdomen rosy.............................106. *serica.*
  b. ,, whitish-ochreous..................107. *rubripes.*

104. *Amer. astreas*, Drury.

(*Sphinx astreas*, Drury, Ins. Exot. ii, pl. XXVIII, 4.)

♀. 56 mm. Head ochreous-whitish, with a black dot on forehead and another on crown. Palpi red, white beneath, apex of all joints broadly black. Antennæ dark fuscous, near base red on back, basal joint whitish above, red beneath. Thorax pale whitish-fuscous, with eight round black dots on back in two series, two on each shoulder, and one on each patagium. Abdomen rosy, beneath white, with a double lateral row of black dots. Legs rose-red, anterior and middle tibiæ fuscous. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin gently rounded, very oblique; semihyaline, tinged with whitish-fuscous; veins fuscous; a black dot on base of costa, a second in middle of base, and a third close beyond second; costa and inner margin suffused with whitish-fuscous; a moderately broad fuscous bar on transverse vein, connected on costa with a subtriangular fuscous apical patch, of which the anterior margin is subdentate on veins, and extends from $\frac{2}{3}$ of costa to middle of hindmargin. Hindwings short, triangular, hindmargin almost straight; semihyaline, tinged with whitish-fuscous, more strongly towards inner margin; veins fuscous; a narrow fuscous apical spot.

Cape York, Queensland; one specimen (Coll. Macleay). Also from India. It appears to me that Boisduval's description under the name of *Chelonia saucia,* Voy. Astr. V., 214, (of which *Lithosia arthus-bertrand* (!), Guér., is certainly a synonym), indicates a species closely allied to *A. astreas,* but distinct.

105. *Amer. brachyleuca,* n. sp.

♂ ♀. 65-72. mm. Differs from *A. astreas* only as follows: Groundcolour of head and thorax white, incisions of neck and collar and posterior edge of collar rosy-red; basal joint of antennæ wholly red. Forewings with basal fourth white, bounded by a broad fuscous fascia, of which the anterior edge is curved inwards, running from ¼ of costa to beyond ¼ of inner margin, well-defined, posterior edge suffused. Hindwings with hindmargin more sinuate (longer in ♂ than in ♀), transverse vein marked with a narrow fuscous bar.

Cooktown, Bowen, and Gayndah, Queensland; five specimens (Coll. Macleay and Masters). This is evidently the species described by Walker under the name of the previous one (*A. astraea,* Walk. Bomb. 725).

106. *Amer. serica,* n. sp.

♂ ♀. 52-54 mm. Head white, with a black dot on crown. Palpi red, white beneath, apex of all joints black. Antennæ fuscous, towards base red, basal joint red with a black apical spot. Thorax white, with black dots as in *A. astreas.* Abdomen and legs as in *A. astreas.* Forewings formed as in *A. astreas*; pale whitish-fuscous, unicolorous; extreme base white, with a black dot on base of costa, and a second in middle of base. Hindwings very pale whitish-fuscous, unicolorous.

Rockhampton and Gayndah, Queensland; four specimens (Coll. Macleay and Masters).

107. *Amer. rubripes*, Walk.

(*Amerila rubripes*, Walk. Suppl. 304.)

♂. 52-60 mm. Head white. Palpi rosy, white beneath, apex of second and terminal joints narrowly black. Antennæ whitish-fuscous, towards base rosy, basal joint white, red beneath. Thorax white, with black dots as in *A. astreas*, incisions of neck and collar and posterior edge of collar rosy. Abdomen whitish-ochreous, beneath white, with double lateral row of black dots. Legs white, femora red above, anterior tarsi and tibiæ internally rosy. Forewings formed as in *A. astreas*; snow-white; a black dot on base of costa, a small one in middle of base, and a larger one close beyond it. Hindwings with hindmargin rather strongly sinuate; snow-white.

Cooktown, Bowen, and Rockhampton, Queensland; three specimens (Coll. Macleay).

36. HYPSA, Hb.

Tongue well-developed. Antennæ in ♂ filiform, ciliated shortly or with moderate fascicles (1), and scattered longer single cilia. Palpi long, ascending, smoothly scaled, second joint rather long, terminal joint not much shorter than second, slender, cylindrical, round-pointed. Forewings in ♂ beneath with roundish impression towards inner margin in middle, bordered above by an oblique strigil; 2 from $\frac{3}{4}$, 3, 4, 5 tolerably approximated, 6 from near 9, 7 and 8 out of 9, 10 connected with 9 by bar. Hindwings with veins 3, 4, 5 approximated at base, 6 and 7 approximated at base, 8 connected with upper margin of cell by bar before middle.

A Hindwings with blackish marginal band.
  a. Hindwings white or whitish.
    1. Forewings light grey, greenish-tinged...108. *basilissa.*
    2. „ rather dark brown...... ......109. *dama.*
  b. Hindwings deep yellow.
    1. Hindwings with blackish median fascia..110. *plagiata.*
    2. „ without „ ....112. *australis*

B. Hindwings without marginal band.

- a. Hindwings without dark markings.........114. *chloropyga.*
- b. „ with blackish markings.
    - 1. Hindwings with subterminal series of black spots .... 111. *caricae.*
    - 2. Hindwings without subterminal series of black spots ....113. *nesophora.*

108. *Hyps. basilissa*, n. sp.

♂ ♀. 68-72 mm. Head white, crown and forehead orange. Palpi black, upper longitudinal half of second joint and base of first joint white. Antennæ dark grey, with a white streak above towards base, ciliations ½. Thorax white, sprinkled with orange, collar and margins of patagia orange, a posterior round spot, one on each shoulder, and one in middle of each patagium black. Abdomen ochreous-yellow, towards base white, with dorsal row of black dots, beneath white with two rows of small black spots. Legs white, femora and tibiæ striped with black. Forewings elongate-triangular, costa strongly arched, apex obtuse, hindmargin obliquely rounded; light grey, greenish-tinged; veins and folds white; a small orange basal spot; a black dot on costa almost at base, and a small black spot in middle very near base; a broad irregularly curved white fascia from costa at ⅔, narrowed beneath, and reaching to near inner margin at ¾, below middle with black band of undersurface showing through obscurely: cilia dark grey, with white spots on veins. Hindwings white; a moderate subtriangular black spot towards costa beyond middle; a moderate blue-black hindmarginal band, inner edge dentate, broadest at apex, attenuated to anal angle; cilia grey, with white spots on veins.

Cooktown and Cairns, Queensland; four specimens (Coll. Macleay). Allied to *H. dominia*, Cr., and *H. marmorea*, Walk., but with hindmarginal band of hindwings entire.

109. *Hyps. dama*, F.

(*Noctua dama*, F., Don., Boisd.; ? *Phalaena silvandra*, Cr. 369 D.)

♂ ♀. 57-64 mm. Head and thorax deep orange; a black dot on each side of collar, and a small black anterior spot on each patagium. Palpi blackish, lower longitudinal half of basal and second joints ochreous-yellow. Antennæ blackish, fascicles 1. Abdomen orange, with dorsal series of transverse black spots, and two sometimes confluent series of small spots on each side beneath. Legs fuscous, beneath ochreous-whitish. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin rounded, rather strongly oblique, inner margin in ♂ prominent beyond middle; rather dark brown; veins and folds slenderly yellowish-white; a small yellowish-white basal patch, containing a basal orange spot, and about six sometimes partially connected small blackish marks; a narrow ochreous-white median longitudinal streak from base, terminating in a moderate irregular roundish spot in middle of disc, shortly acutely produced along vein 3; cilia fuscous. Hindwings yellowish-white; a moderate blackish hindmarginal band, dilated towards apex, rather projecting inwards below middle, narrowed at anal angle, and continued as a dark grey suffusion along inner margin; cilia blackish.

Cape York and Cooktown, Queensland; six specimens (Coll. Macleay and Masters). Also from New Guinea; if the form *silvandra*, Cr., is specifically identical, it extends to India.

110. *Hyps. plagiata*, Walk.

(*Hypsa plagiata*, Walk. Bomb. 457; *H. discreta*, ib. Suppl. 216.)

♂ ♀. 50-63 mm. Head orange, sometimes with small dark fuscous spot on crown. Palpi black, second joint ochreous-yellow except at apex. Antennæ blackish, fascicles 1. Thorax dark fuscous, collar, patagia, and back margined with orange. Abdomen orange, segments with basal blackish bands, sometimes obsolete towards base, extreme apex blackish. Legs dark fuscous, suffusedly spotted with whitish-ochreous. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded, inner margin in ♂ prominent in middle; dark brown; veins and folds slenderly yellow-whitish; two narrow very irregular-dentate blackish fasciæ near base, both furcate and connected towards costa, included basal area orange, outer one margined posteriorly by a very irregular narrow whitish-ochreous fascia; an irregular roundish rather large ochreous-white discal spot beyond middle, sometimes containing a small cloudy dark fuscous spot; cilia dark brown. Hindwings deep ochreous-yellow; two moderate irregular blackish fasciæ, tending to be broken up into spots, first median, second hindmarginal; cilia ochreous-yellow.

Bowen and Rockhampton, Queensland; Clarence River, New South Wales; rather common.

111. *Hyps. caricae*, F.

(*Noctua caricae*, F., Don.; *N. alciphron*, Cr. 133 E.)

♂ ♀. 55-60 mm. Head and thorax orange, with a small black anterior spot on each patagium. Palpi orange, terminal joint, apex of second, and a dot on basal joint black. Antennæ black, ciliations thin, 1. Abdomen orange, segments 4-7 with black dorsal spots, and with a lateral series of black dots. Legs whitish-ochreous, anterior and middle femora and tibiæ blackish above. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin rounded, rather strongly oblique, inner margin in ♂ prominent in middle; brown; veins and folds slenderly yellow-whitish; a moderate orange basal patch, outer edge straight, not oblique, containing black subcostal and median dots near base, outer edge marked with three or four black dots; a small round yellow-whitish discal spot on transverse vein; cilia brown. Hindwings deep ochreous-yellow; three moderate suboval blackish discal spots, first before middle, second beyond first, third below first; an irregular subterminal series of small black spots, anteapical spot larger, one below middle further from margin; cilia ochreous-yellowish.

Cape York and Cooktown, Queensland; two specimens (Coll. Macleay). Also from New Guinea, Java, Ceylon, and India. In the only ♂ which I have examined vein 1 of the forewings is connected with inner margin by a bar near apex, but this may very possibly be only an exceptional individual character.

112. *Hyps. australis*, Boisd.

(*Aganais australis*, Boisd. Voy. Astr. V, 252, pl. V, 3; *Hypsa aequalis*, Walk. Suppl. 214.)

♂. 53 mm. Head orange. Palpi orange, terminal joint and a dot on basal joint black. Antennæ blackish, fascicles 1. Thorax orange, with a black anterior dot on each patagium. Abdomen orange, with dorsal and lateral series of small black spots. Legs whitish-ochreous, anterior and middle femora and tibiæ fuscous above. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin very obliquely rounded, inner margin prominent beyond middle; rather dark brown; veins and folds slenderly yellow-whitish; a moderately large basal orange patch, containing two black subcostal dots and one in middle near base; two moderately large yellow-whitish discal blotches, first subquadrate, adjoining basal patch, separated from it by a black dot above lower median vein, and small black spot below it; second roundish, transverse, central; cilia fuscous. Hindwings ochreous-orange; a very narrow (but probably variable in width) dentate dark fuscous streak along hindmargin; cilia fuscous.

New South Wales (?); one specimen (Coll. Macleay). Also from New Guinea and Aru.

113. *Hyps. nesophora*, n. sp.

♂ ♀. 50-57 mm. Head and thorax whitish-ochreous, with a small black anterior spot on each patagium. Palpi black, second joint whitish-ochreous except at apex. Antennæ black, fascicles 1. Abdomen orange, segments 2-4 with dorsal black dot, 5-8 narrowly black at base, sometimes all black at base, and with lateral series of small black spots. Legs dark fuscous, beneath ochreous-whitish. Forewings rather elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded, inner margin in ♂ somewhat prominent beyond middle ; brown, very finely sprinkled with yellow-whitish; veins and folds slenderly yellow-whitish ; a whitish-ochreous basal patch extending on costa to $\frac{1}{3}$ and on inner margin to $\frac{1}{4}$, outer edge very ill-defined, containing six round black dots, of which three are subcostal, two on submedian fold, and one on outer edge above middle ; transverse vein suffused obscurely with whitish-ochreous : cilia brown. Hindwings orange ; two moderate suboval blackish spots, first below middle, second beyond middle, sometimes with a few connecting blackish scales ; a small cloudy blackish spot below first, nearly touching anal angle ; cilia orange.

Newcastle and Sydney, New South Wales ; common (Coll. Macleay and Masters.)

114. *Hyps. chloropyga*, Walk.

(*Hypsa chloropyga*, Walk. Bomb. 455 ; *H. analis*, ib. 1677 ; *Agape cyanopyga*, Feld. Reis. Nov. pl. CVI, 4.)

♀. 56-62 mm. Head and thorax deep yellow ; a black anterior dot on each patagium. Palpi pale greyish-ochreous, upper longitudinal half black. Antennæ black, with a white longitudinal streak. Abdomen ochreous-yellow, segments 2-4 narrowly blackish at base above, anal segment large, deep metallic blackish-green. Legs whitish-ochreous, anterior femora dark fuscous above. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded ; deep yellow ; a black almost basal dot on costa and another in middle near base ; five small round reddish spots in disc, first before $\frac{1}{4}$, second beyond and above first, third beyond and below second, fourth central, fifth beyond fourth ; sometimes a sixth between fourth and fifth : cilia deep yellow. Hindwings and cilia deep ochreous-yellow.

Cape York, Cooktown, and Bowen, Queensland ; three specimens (Coll. Macleay). Also from Ceram and Amboina.

37. DIGAMA, Moore.

Tongue well-developed. Antennæ in ♂ moderately bipectinated, apex simple. Palpi moderately long, ascending, smoothly scaled, terminal joint moderately long, cylindrical. Forewings in ♂ with a dilated impression beneath on inner margin before middle; 2 from $\frac{2}{3}$, 7 and 8 out of 9, 10 connected by bar with 9. Hindwings in ♂ with oblique strigil on costa above before middle; 3 and 4 from a point, 6 and 7 short-stalked, 8 closely approximated to cell towards middle.

115. *Dig. marmorea*, Butl.

(*Digama marmorea*, Butl., Trans. Ent. Soc. Lond. 1877, 363; *D. piepersiana*, Snell., Tijd. v. Ent. 1879, 81, pl. VII, 2.)

♂ ♀. 26-31 mm. Head fuscous-whitish, face dark fuscous. Palpi fuscous-whitish, with three dark fuscous bands. Antennæ dark fuscous. Thorax fuscous-whitish, patagia and two posterior dots dark fuscous. Abdomen ochreous-yellow, with dorsal and lateral series of black spots. Legs dark fuscous ringed with whitish, posterior pair whitish spotted with dark fuscous. Forewings elongate, moderately dilated, costa slightly arched, apex rounded, hindmargin rather obliquely rounded; whitish, fuscous-tinged; a dark fuscous sub-triangular blotch extending along costa from base to $\frac{2}{5}$, reaching half aross wing; a dark fuscous oblique strigula from costa at $\frac{2}{5}$, and another at $\frac{2}{3}$; two black dots obliquely placed in disc at $\frac{1}{3}$, two others in middle, a fifth at $\frac{2}{3}$, and a sixth beyond this; two black dots on inner margin obliquely before these respectively, in ♂ forming two spots on dilation; an irregular quadrate dark fuscous blotch on inner margin about $\frac{2}{3}$, posterior angle connected with costa at $\frac{4}{5}$ by an irregularly sinuate subdentate dark fuscous line; an irregular narrow anteriorly subdentate suffused dark fuscous hindmarginal fascia: cilia fuscous-whitish, with a median row of dark fuscous spots. Hindwings light ochreous-yellow; a dark fuscous discal dot before middle; a dark fuscous apical spot; cilia whitish-yellow, round apex grey on basal half.

Duaringa, Queensland; sent rather commonly by Mr. G. Barnard. Also from Celebes.

SYNTOMIDIDAE.

Ocelli present. Antennæ about $\frac{2}{3}$, thick. Maxillary palpi absent. Posterior tibiæ with all spurs present. Frenum developed. Forewings with 1 simple at base, 7, 8, 9, and 10 stalked. Hindwings with 1c absent, 8 absent.

The absence of vein 8 of the hindwings is the main characteristic of the family. In all the species here described the form of wing is practically identical, except that in *Agaphthora* the hindwings are relatively much smaller, and it is therefore not mentioned specifically; the forewings are elongate-triangular, costa posteriorly arched, apex obtuse, hindmargin very oblique, somewhat rounded, slightly sinuate beneath, inner margin short; hindwings short, small, rounded-triangular. In the specific descriptions a normal type of marking is assumed, consisting of five spots in the forewings, first beneath lower median towards base, second above lower median before middle, third beneath lower median under second, fourth below costa towards apex, fifth between fourth and anal angle, evenly bisected by a black vein (3); and two in hindwings, first towards base, second beyond middle, both generally bisected by a vein. The palpi, legs, and cilia of wings are always blackish, and therefore not specifically mentioned. The collar is reckoned with the head.

Most of the species are tropical. There are only four Australian genera, all also Indo-Malayan; in all vein 4 of the hindwings is absent.

A Hindwings with vein 3 also absent.
  a. Hindwings with vein 6 absent ....38. *Agaphthora.*
  b. „ „ present ....41. *Euchromia.*

B. Hindwings with vein 3 present.
  a. Veins 3 and 5 of hindwings from a point. 39. *Hydrusa.*
  b. „ „ „ widely remote...40. *Choromeles.*

38. AGAPHTHORA, n. g.

Tongue well-developed. Antennæ filiform, in ♂ very shortly ciliated. Palpi short, porrected, loosely scaled. Spurs very short. Forewings with vein 2 from $\frac{3}{4}$, 4 and 5 stalked, 7 out of 8 below 11, 9, 10, and 11 out of 8. Hindwings with veins 3, 4, and 6 absent.

116. *Agaph. melanora*, n. sp.

♀. 26-27 mm. Head black, face and sides orange. Antennæ black. Thorax black, patagia orange except towards apex. Abdomen black, lateral margin orange. Forewings black; spots moderate, transparent, colourless; first and third confluent into a rather elongate wedge-shaped spot, lower margin subconcave; second wedge-shaped, nearly as long; fourth wedge-shaped, upper angle cut off by a black vein; fifth subovate. Hindwings extremely small; first spot absent; second moderate, transparent, suboval, unevenly bisected.

Cape York, Queensland; two specimens (Coll. Macleay).

117. *Agaph. sphenodes*, n. sp.

♂ ♀. 25-27 mm. Only differs as follows: Head orange, crown more or less blackish. Thorax black, with a posterior orange spot, patagia orange, except towards apex. Abdomen orange, segments narrowly black at base, anal segment wholly black. Forewings with first spot more elongate towards base. Hindwings with spot evenly bisected.

Cairns, Queensland; three specimens (Coll. Macleay).

39. HYDRUSA, Walk.

Tongue well-developed. Antennæ in ♂ bidentate, dentations shortly ciliated. Palpi short, porrected, loosely scaled. Spurs very short. Forewings with vein 2 from about $\frac{2}{3}$, 4 and 5 approximated at base or from a point, 7 out of 8 below 10, 9, 10, and 11 out of 8. Hindwings with vein 4 absent, 3 and 5 from a point or short-stalked, 6 absent.

In the ♀ the anal hairs appear to be always whitish-ochreous; allowance must be made for this when the anal segment is described as wholly black.

A. Forewings with spots wholly absent ....B.
,, ,, present as usual.........C.
B. Anal segment black..............................139. *bicolor.*
,, ,, orange except base ....138. *eschatias.*
C. Forewings with first and third spots wholly
confluent ....118. *ecliptis.*
,, ,, ,, not ,, D.
D. Forewings with spots colourless.................E.
,, ,, more or less orange ...F.
E. Thorax with orange spots ....120. *pyrrhodera.*
,, wholly black ....121. *hyalota.*
F. Abdomen with ante-penultimate segment
wholly black ....G.
,, ,, ,, not ,, K.
G. Abdomen with ventral surface black throughout 123. *cyanura.*
,, ,, ,, not ,, H.
H. Hindwings with first spot obsolete or very small 123. *leucacma.*
,, ,, rather large, cloudy......130. *macroplaca.*
K. Antennæ with apex white.......................L.
,, ,, black ....P.
L. Forewings with fourth spot connected by a
similar spot with fifth ....119. *stelotis.*
,, ,, not ,, ...M.
M. Hindwings with spots touching ....134. *aperta.*
,, ,, remote ....N.
N. Hindwings with upper part of first spot obsolete 137. *phepsalotis.*
,, ,, moderate ....O.
O. Hindwings with upper part of second spot dot-
like or absent ....136. *intensa.*
,, ,, present, rather small...135. *annulata.*
P. Hindwings with spots touching..................Q.
,, ,, separate ....T.

Q. Forewings with fourth spot connected by an additional spot with fifth...... ....R.
„ „ not „ ...S.
R. Additional spot as long as fourth ....131. *chlorometis.*
„ half as long „ ....133. *nesothetis.*
S. Abdomen with penultimate segment wholly black ....125. *paraula.*
„ „ not „ .....126. *anepsia.*
T. Abdomen with two ante-apical segments green-black beneath ....132. *mochlotis.*
„ „ not „ „ ...U.
U. Abdomen with penultimate segment wholly black .... 124. *antitheta.*
„ „ not „ „ ......W.
W. Abdomen with anal segment black with a small orange spot ....127. *pyrocoma.*
„ „ orange except base ......X.
X. Forewings with a small additional spot between fourth and fifth..............................128. *synedra.*
„ without „ „ ....129. *hesperitis.*

118. *Hydr. ecliptis*, n. sp.

♂ ♀. 31-36 mm. Head orange, space between antennæ black. Antennæ black. Thorax black, posterior extremity sometimes orange. Abdomen orange, base of segments black, ventral surface black throughout, apical segment wholly black. Forewings black; spots moderate, pale dull orange, reddish-tinged, semitransparent; first coalescing with third to form a large irregular oblong spot: second elongate-trapezoidal or wedge-shaped; fourth elongate, connected by a similar additional spot with fifth; fifth roundish. Hindwings black; spots semitransparent, pale orange, margins darker; first large, roundish, occupying nearly basal half of wing, not reaching base, bisecting vein black at base only; second moderate, irregular, confluent in disc with first, veins orange.

Cooktown, Queensland; eight specimens (Coll. Lucas and Macleay).

119. *Hydr. stelotis*, n. sp.

♂ ♀. 32 mm. Head orange, with small dark fuscous spot between antennæ. Thorax blackish. Antennæ black, apex white. Abdomen orange, segments narrowly black at base, anal segment wholly black. Forewings blackish; spots moderate, orange; first subquadrate; second suboblong; third oblique-transverse; fourth small, rather elongate, connected by a similar spot with fifth; fifth small, subcordate, lower section smaller. Hindwings blackish, spots orange; first rather large, roundish, reaching inner margin; second small, nearly or quite touching first in disc.

Cooktown, Queensland; two specimens (Coll. Macleay).

120. *Hydr. pyrrhodera*, n. sp.

♂ ♀. 22-25 mm. Head black, face orange, collar and back of crown reddish-orange. Antennæ black, tip white. Thorax black, a posterior spot and a small spot on patagia in middle orange. Abdomen deep orange, base of segments blue-black, ventral surface mostly black throughout, anal segment wholly blue-black. Forewings black, spots rather small, semitransparent, colourless; first roundish; second larger, subtriangular; third diamond-shaped; fourth elongate, posterior extremity often surmounted by a dot; fifth roundish; rarely a small additional spot between fourth and fifth. Hindwings black; spots semitransparent, colourless; first moderate, irregular, not quite reaching base or margins, intersecting veins dull orange; second with upper section very small or absent, lower moderate, oval.

Thursday Island, Torres Straits; Cape York, Cooktown, and Cairns, Queensland; nine specimens (Coll. Lucas and Macleay).

121. *Hydr. hyalota*, n. sp.

♂. 32 mm. Head orange, with a blackish spot between antennæ. Antennæ and thorax black. Abdomen orange, base of segments narrowly greenish-black, anal segment wholly greenish-black. Forewings greenish-black; spots moderate, hyaline, colourless:

first small, round; second suboval; third diamond-shaped; fourth elongate, narrow; fifth roundish. Hindwings greenish-black; spots hyaline, colourless; first roundish, almost wholly beneath lower median vein; second roundish, upper section very small.

Cape York, Queensland; one specimen (Coll. Macleay).

122. *Hydr. leucacma*, n. sp.

♂♀ 33-42 mm. Head orange; a transverse line between antennæ dark fuscous. Antennæ black, tip white. Thorax blue-black, with a posterior orange spot. Abdomen iridescent-orange, base of segments blue-black, three apical segments wholly blue-black. Forewings black; spots moderate, semitransparent, pale dull orange; first rather small, subquadrate; second irregular; third diamond-shaped, upper angle truncate; fourth very elongate, sometimes surmounted posteriorly by a dot; fifth subcordate. Hindwings black; first spot very small, cloudy, or obsolete; second moderate, semitransparent, tinged with dull orange, subcordate, unevenly bisected.

Cairns, Queensland; four specimens (Coll. Lucas and Macleay).

123. *Hydr. cyanura*, n. sp.

♂. 30 mm. Head orange, with a few dark fuscous scales between antennæ. Antennæ black. Thorax black, posteriorly with a few orange scales. Abdomen orange, base of segments black, ventral surface black throughout, three apical segments wholly black. Forewings black; spots moderate, semitransparent, tinged with pale dull orange; first rather small, subquadrate; second elongate-trapezoidal; third diamond-shaped, upper angle truncate; fourth very elongate; fifth subcordate. Hindwings black; spots semitransparent, tinged with pale orange; first rather large, subquadrate, nearly touching base, reaching from inner margin to lower median vein, suffused with orange beneath; second moderate, rounded-triangular, unevenly bisected.

Thursday Island, Torres Straits; one specimen (Coll. Lucas).

124. *Hydr. antitheta*, n. sp.

♂. 30-35 mm. Head orange, with a fuscous spot between antennæ. Antennæ and thorax blackish. Abdomen orange, base of segments blue-black, two apical segments wholly black. Forewings purple-blackish; spots moderate, semitransparent, whitish-ochreous, slightly orange-tinged; first subquadrate; second similar; third subtriangular, sometimes surmounted by a dot; fourth very elongate, posterior extremity surmounted by an elongate dot; fifth subcordate. Hindwings blackish; spots pale dull orange, partially semitransparent; first moderately large, irregular, ill-defined, nearly or quite touching margins, upper section smaller; second moderate, roundish.

Gayndah, Queensland; two specimens (Australian Museum).

125. *Hydr. paraula*, n. sp.

♀. 28 mm. Head orange, with a blackish transverse line between antennæ. Antennæ black. Thorax black, with a small orange posterior spot. Abdomen orange, base of segments broadly violet-black, two apical segments wholly violet-black. Forewings black; spots moderately large, semitransparent, pale dull orange; first trapezoidal; second similar; third transverse-suboblong or subtriangular, sometimes surmounted by a dot; fourth very elongate, posterior extremity sometimes surmounted by a dot; fifth roundish. Hindwings black; spots semitransparent, pale dull orange; first deeper orange, occupying basal $\frac{2}{5}$, touching margins but not base, bisecting vein orange; second moderate, rounded-triangular, unevenly bisected, anterior angle acute, touching first.

Cooktown, Queensland; two specimens (Coll. Lucas and Macleay).

126. *Hydr. anepsia*, n. sp.

♂. 28 mm. Head orange, space between antennæ dark fuscous. Antennæ and thorax black. Abdomen orange, base of segments black, anal segment wholly black. Forewings blackish; spots moderate, semitransparent, pale dull orange; first very small, rounded; second trapezoidal; third subtriangular; fourth elongate, very obscure; fifth roundish. Hindwings blackish; spots semitransparent, pale dull orange; first occupying basal $\frac{2}{5}$, not quite reaching base or costa, outer edge irregular, bisecting vein blackish; second moderate, rounded-triangular, anterior angle touching first.

Cooktown, Queensland; one specimen (Coll. Macleay).

127. *Hydr. pyrocoma*, n. sp.

♂. 42-46 mm. Head deep reddish-orange, space between antennæ blackish. Antennæ black. Thorax black, with a small orange posterior spot. Abdomen orange, base of segments black, anal segment black except a very small orange spot. Forewings black; spots moderate, deep orange, thinly scaled; first rounded-quadrate; second rounded-oblong; third irregular diamond-shaped, upper angle truncate, upper side surmounted by a small spot; fourth very elongate, surmounted by a small elongate spot, and connected with fifth by a small subcrescentic spot beneath posterior extremity; fifth large, roundish. Hindwings black; spots deep orange, thinly scaled; first large, occupying basal $\frac{2}{5}$, not reaching margins, outer edge irregular, bisecting vein black; second rather large, round, upper section smaller.

Rockhampton, Queensland; two specimens (Coll. Macleay).

128. *Hydr. synedra*, n. sp.

♂ ♀. 33-41 mm. Head orange, with dark fuscous spot between antennæ. Antennæ black. Thorax black, with a small posterior orange spot. Abdomen orange, base of segments black. Forewings violet-black; spots moderately large, orange, thinly scaled; first rounded-quadrate; second trapezoidal, variable; third irregular-oblong, upper angle produced and truncate, upper side sometimes surmounted by a dot; fourth very elongate, sometimes surmounted by an obscure dot, connected with fifth by a small subcrescentic spot beneath posterior extremity;

fifth subcordate. Hindwings violet-black; spots orange, thinly scaled; first occupying basal $\frac{2}{5}$, outer edge irregular, bisecting vein orange; second moderate, transverse-oval, upper section smaller.

Rockhampton, Queensland; four specimens (Coll. Macleay).

129. *Hydr. hesperitis*, n. sp.

♂ ♀. 40-46 mm. Head orange, a transverse line between antennæ dark fuscous. Antennæ blackish. Thorax blackish, with an orange posterior spot. Abdomen orange, base of segments blue-black. Forewings greenish-black; spots moderate, dull orange; first irregularly subquadrate; second similar; third diamond-shaped, upper angle acutely produced, upper sides sometimes surmounted by a dot; fourth very elongate; fifth subcordate. Hindwings blackish; spots dull orange; first occupying basal $\frac{2}{5}$, not quite reaching base, outer edge twice deeply dentate, bisecting vein orange; second moderate, suboval, upper section much smaller.

Cape York, Queensland; three specimens (Australian Museum).

130. *Hydr. macroplaca*, n. sp.

♀. 32 mm. Head orange, space between antennæ dark fuscous. Antennæ black (apex broken). Thorax blackish, with a posterior orange spot. Abdomen orange, base of segments black, three apical segments wholly green-black, ventral surface mostly blackish throughout. Forewings greenish-black; spots moderate, light dull orange; first subquadrate; second trapezoidal; third curved-elongate, surmounted by a small additional spot; fourth very elongate, surmounted by a small elongate spot, and with a dot beneath posterior extremity; fifth roundish. Hindwings blackish; spots pale dull orange, cloudy and obscurely defined; first occupying basal $\frac{2}{5}$, bisecting vein black; second rather small, roundish, upper section almost obsolete.

Sydney, New South Wales, in November; one specimen received from Mr. G. H. Raynor.

131. *Hydr. chlorometis*, n. sp.

♂. 21 mm. Head light ochreous-yellow, with a dark fuscous line between antennæ. Antennæ blackish. Thorax blackish, a posterior spot and a spot on patagia light ochreous-yellow. Abdomen light ochreous-yellow, base of segments narrowly blackish, sides of anal tuft blackish. Forewings blackish; spots rather large, transparent, yellowish-tinged; first quadrate; second elongate-trapezoidal; third curved-oblong, surmounted by a smaller triangular additional spot; fourth very elongate, surmounted by a dot, and connected with fifth by a similar equally elongate spot; fifth roundish. Hindwings blackish; spots transparent, yellowish-tinged; first large, occupying basal half of wing, not quite reaching base, outer edge rounded; second moderately large, rounded-triangular, confluent with first in disc.

Glen Innes (3,000 feet), New South Wales; one specimen in December.

132. *Hydr. mochlotis*, n. sp.

♂ ♀. 33-36 mm. Head orange, with some fuscous scales between antennæ. Antennæ black. Thorax black, with a small orange posterior spot. Abdomen iridescent-orange, base of segments narrowly violet-black, two ante-apical segments green-black on sides and beneath, penultimate in ♀ above also, base of anal segment green-black. Forewings black; spots large, thinly scaled, light orange; first subquadrate; second similar; third irregular, elongate-pentagonal, surmounted by a small elongate spot; fourth very elongate, surmounted by a very small elongate spot, and connected with fifth by a small spot beneath its posterior extremity; fifth sub-cordate. Hindwings black; spots thinly scaled, light orange; first very large, occupying basal half of wing, outer edge irregularly rounded, bisecting vein not black; second rather large, roundish, almost touching costa veins not black.

South Australia; three specimens (Coll. Macleay).

133. *Hydr. nesothetis*, n. sp.

♂. 40-46 mm. Head orange-yellow, with a dark fuscous band between antennæ. Antennæ blackish. Thorax purple-black, with a posterior orange-yellow spot. Abdomen orange-yellow, base of segments purple-blackish. Forewings purple-blackish; spots rather large, thinly scaled, light ochreous-yellow; first trapezoidal; second similar, more elongate; third curved-suboblong, surmounted by a smaller triangular additional spot; fourth elongate, surmounted posteriorly by a linear spot, and connected with fifth by a rather small broad-crescentic spot beneath posterior extremity; fifth roundish. Hindwings purple-blackish: spots large, thinly scaled, light ochreous-yellow; first occupying basal half of wing, outer edge irregularly rounded; second roundish, confluent with first in disc above and below middle, enclosing a small spot of groundcolour.

Hay, New South Wales; two specimens.

134. *Hydr. aperta*, Walk.

(*Syntomis aperta*, Walk. Suppl. 72.)

♂. 40-44 mm. Head orange, crown broadly black. Antennæ black, apex white. Thorax black. Abdomen orange, base of segments blue-black. Forewings purplish-black; spots moderate, orange; first subquadrate; second trapezoidal; third irregular trapezoidal, anterior angle produced and truncate, upper side sometimes surmounted by an additional dot; fourth very elongate, posterior extremity surmounted by a dot; fifth roundish. Hindwings purplish-black; spots rather large, orange; first occupying basal $\frac{2}{5}$, outer edge strongly rounded, bisecting vein black or sometimes orange; second roundish, touching first in disc.

Bathurst (2300 feet), New South Wales; in March; three specimens.

135. *Hydr. annulata*, F.

(*Zygaena annulata*, F.E.S. 389; *Syntomis annulata*, Boisd. Zyg. 122, pl. VII, 8, pl. VIII, 2; *Hydrusa cingulata*, Butl., Journ. Linn. Soc. 1876, 352; *H. nigriceps*, ib. 352.)

♂ ♀. 34-40 mm. Head orange, crown broadly black. Antennæ black, apex white. Thorax black. Abdomen orange, base of segments greenish-black. Forewings greenish-black; spots moderate, thinly scaled, orange; first subquadrate; second trapezoidal; third irregular diamond-shaped; fourth elongate, sometimes surmounted by a variable dot; fifth roundish. Hindwings greenish-black; spots moderate, orange; first occupying basal third, outer edge somewhat irregular, bisecting vein black; second irregular, upper section smaller or nearly equal.

Maryborough, Queensland; Sydney, New South Wales; also from Tasmania; in November, March, and April, common.

136. *Hydr. intensa,* Butl.

(*Hydrusa intensa,* Butl., Journ. Linn. Soc. 1876, 353.)

♂ ♀. 25-30 mm. Head black on crown, face orange, collar reddish-orange. Antennæ black, apex white. Thorax black. Abdomen deep orange, base of segments black, sides of anal segment black. Forewings greenish-black; spots rather small, semitransparent, reddish-orange; first subquadrate; second similar; third diamond-shaped; fourth suboblong, rarely surmounted by a dot; fifth roundish. Hindwings greenish-black; spots reddish-orange; first rather small, not reaching margins, bisecting vein black; second thinly scaled, small, oval, upper section dot-like or absent.

Cooktown and Rockhampton, Queensland; Grafton, Sydney, and Wollongong, New South Wales; in November and April, common, sometimes abundant.

137. *Hydr. phepsalotis,* n. sp.

♂. 29-33 mm. Head black on crown, face orange, collar reddish-orange. Antennæ black, apex white. Thorax black. Abdomen reddish-orange, base of segments black, sides of anal segment black. Forewings greenish-black; spots small or very small, semitransparent, dull orange; first very small, roundish; second subquadrate; third irregular diamond-shaped, variable; fourth suboval; fifth roundish. Hindwings greenish-black; spots dull orange; first moderate or small, suboval, lying entirely beneath lower median, therefore not bisected; second small or very small, oval, upper section absent, sometimes wholly absent.

Maryborough, Queensland; Wollongong, New South Wales; four specimens (Coll. Macleay and Australian Museum).

138. *Hydr. eschatias*, n. sp.

♂. 32 mm. Head black on crown, face orange, collar reddish-orange. Antennæ black, apex white. Thorax black. Abdomen orange, base of segments narrowly black. Forewings black; spots wholly absent. Hindwings black; first spot very small, orange; second absent.

One specimen, of uncertain locality (Coll. Macleay).

139. *Hydr. bicolor*, Walk.

(*Euchromia* (*Hydrusa*) *bicolor*, Walk. Bomb. 255, Butl. Ill. Het. I, 19, pl. IX, 1.)

♂ ♀. 29-32 mm. Head deep reddish-orange, with a narrow black line between antennæ. Antennæ black, apex white. Thorax black. Abdomen deep orange, base of segments narrowly black, anal segment wholly black. Forewings and hindwings black; spots wholly absent.

Cairns, Queensland; six specimens (Coll. Macleay).

40. CHOROMELES, n.g.

Tongue well-developed. Antennæ in ♂ shortly bipectinated. Palpi short, porrected, loosely scaled. Spurs very short. Forewings with vein 2 from about $\frac{2}{3}$, 4 and 5 approximated at base, 7 out of 8 below 10, 9, 10, and 11 out of 8. Hindwings with vein 4 absent, 3 and 5 remote at base, 6 absent.

This genus has been previously characterised by Butler under the name of *Trianeura*, a bad orthographical blunder for *Trineura*, which name is untenable, having been previously employed for a genus of *Diptera*; I therefore alter it.

140. *Chor. geographica*, n. sp.

♂. 21-26 mm. Head orange, sometimes with a fine dark fuscous line between antennæ. Antennæ black. Thorax blackish, with moderately large anterior and posterior orange spots. Abdomen orange, base of segments blackish, basal segment wholly blackish. Forewings blackish; spots moderate, semitransparent, tinged with pale yellowish-orange; first very elongate, anteriorly dilated, extending beneath third to its posterior edge, sometimes with a small linear mark beneath it posteriorly; second trapezoidal; third rather small, rounded-triangular, compressed between first and second; fourth more or less elongate, sometimes surmounted by a dot, often connected with fifth by a variable small or elongate spot which is sometimes absent; fifth roundish. Hindwings blackish; spots orange; first occupying nearly basal half, not reaching base or inner margin, outer edge indented in middle, vein black; second small, oval, not bisected, sometimes with additional dots above and below.

Queensland; four specimens. One specimen has in one forewing an abnormal branch rising out of vein 1 beyond middle on upper side, an incidental deformity.

141. *Chor. strepsimeris*, n. sp.

♂. 32 mm. Head orange, with a dark fuscous line between antennæ. Antennæ black. Thorax black, with anterior and posterior orange spots, patagia orange except towards apex. Abdomen orange, base of segments black. Forewings blackish; spots moderate, semitransparent, tinged with dull orange, margins darker; first irregular-elongate, extending beneath third; second rather small, subquadrate; third rather small, roundish; fourth suboblong, connected with fifth by a small spot beneath anterior extremity; fifth subcordate. Hindwings blackish; spots semitransparent, tinged with dull orange; first divided into two, upper small, quadrate, beneath costa at $\frac{1}{3}$, lower moderate, somewhat diamond-shaped, below median vein, almost reaching base and inner margin; second moderate, transverse-ovate, evenly bisected.

Bowen, Queensland; one specimen (Coll. Macleay).

41. EUCHROMIA, Hb.

Tongue well-developed. Antennæ in ♂ bipectinated, apex simple. Palpi rather short, porrected, with appressed scales, somewhat pointed. Spurs short. Forewings with vein 2 from

¾, 4 and 5 closely approximated or from a point, 6 near or from a point with 9, 7 and 8 out of 9 below 7, 11 closely approximated to 9, sometimes connected with it at a point near base. Hindwings with veins 3 and 4 absent, 2 and 5 from a point or short-stalked, 6 and 7 from a point or short-stalked.

142. *Euchr. polymena*, L.

(*Sphinx polymena*, L. Syst. Nat. ii, 106, Cr. 13 D.)

♀. 44 mm. (Head absent; should be head blue, antennæ and palpi black, collar red.) Thorax black, with a white spot on shoulder, and white spots beneath. Abdomen black, basal segment red, second and third posteriorly blue, fourth and fifth crimson-red except at base, sixth to eighth posteriorly deep blue. Coxæ white. Forewings black; spots deep ochreous-yellow, moderate; first subquadrate; second wedge-shaped; third trapezoïdal, touching second; fourth elongate, connected by a similar spot with fifth; fifth subcordate; base and a small discal dot deep blue. Hindwings black; spots moderately large, deep ochreous-yellow; first almost basal, second transverse-oval, both trisected, reaching costa but not inner margin.

North Australia; one specimen (Coll. Macleay). Also from Ceylon and India.

143. *Euchr. irus*, Cr.

(*Sphinx irus*, Cr. 368 A; *Glaucopis irius*, Boisd. Voy. Astr. V, 192; *G. ganymede*, Dbld., Lort Disc. 519, pl. III, 3.)

♂. 49-52 mm. Head and thorax metallic blue, face and a streak behind eye white. Antennæ black. Abdomen deep crimson, base of segments narrowly black above, three basal segments metallic blue above except base, coxæ white. Forewings black; base, a discal crescentic spot, and a very slender dorsal streak metallic blue; spots transparent, colourless; first very small, oval, sometimes obsolete; second and third confluent into a transverse-oblong blotch, unevenly bisected; fourth rather small, trapezoidal, sometimes with an additional dot beneath; fifth subcordate. Hindwings black; spots moderately large, transparent, colourless; first almost basal; second transverse-oval; both trisected, reaching costa but not inner margin.

var. *a.* (*irius*, Boisd.) Basal segment of abdomen ochreous-white above.

var. *β.* (*ganymede*, Dbld.) Three basal segments of abdomen wholly black above.

Cape York and Cooktown, Queensland; common (Coll. Macleay and Australian Museum). Also from Ceram and Celebes.

ZYGAENIDAE.

Ocelli present. Antennæ about $\frac{3}{4}$, thickened or pectinated. Maxillary palpi absent. Frenum developed. Forewings with 1 simple or furcate at base. Hindwings with vein 8 anastomosing or connected with upper margin of cell.

The Australian species belong entirely to two genera of the more ancestral section of the family, the other and later section being principally developed in Europe.

a. Hindwings with vein 6 absent..............42. *Hestiochora.*
b. ,, ,, ,, present ....43. *Procris.*

42 HESTIOCHORA, n.g.

Tongue well-developed. Antennæ thick, in ♂ bipectinated, apex simple. Palpi short, porrected, rough-haired beneath, pointed. Posterior tibiæ without middle-spurs. Forewings with vein 1 furcate at base, 2 from $\frac{5}{6}$, all veins separate. Hindwings with vein 1c present, 4 and 5 separate or from a point or stalked, 6 absent, 8 anastomosing with upper margin of cell from before to beyond middle.

A. Collar black..147. *rufiventris.*
B. ,, not black.
  a. Face orange...................................144. *xanthocoma.*
  b. ,, black.
    1. Abdominal band red.......................145. *erythrota.*
    2. ,, ,, whitish-ochreous......146. *tricolor.*

144. *Hest. xanthocoma*, n. sp.

♂. 18 mm. Head, palpi, and collar bright orange. Antennæ blue-black, pectinations yellow. Thorax blue-black. Abdomen blue-black, yellowish beneath, three basal segments wholly ochreous-yellow, anal segment with a large ochreous-yellow dorsal spot. Legs dark violet-fuscous, beneath yellowish. Forewings extremely elongate-triangular, costa sinuate, apex rounded, hindmargin extremely obliquely rounded; blackish-fuscous, violet-tinged; a thinly scaled ochreous-yellow streak beneath costa from near base to $\frac{1}{4}$, acutely attenuated posteriorly; a broad irregular anteriorly semihyaline ochreous-yellow median longitudinal streak from near base to $\frac{2}{3}$: cilia dark fuscous. Hindwings elongate-ovate; light ochreous-yellow, becoming semihyaline towards disc below middle; a rather narrow anteriorly suffused blackish hindmarginal fascia; cilia dark fuscous; veins 4 and 5 separate.

Duaringa, Queensland; one specimen sent by Mr. G. Barnard.

145. *Hest. erythrota*, n. sp.

♂. 22 mm. Head, antennæ, thorax, and legs black; collar and palpi red. Abdomen black, three basal segments, and basal ring of anal segment red. Forewings extremely elongate-triangular, costa sinuate, apex rounded, hindmargin very obliquely rounded; black, rather thinly scaled in middle of disc; a subcostal attenuated streak from near base to $\frac{1}{3}$, and a broader irregular submedian streak from base to middle pale reddish, semitransparent; a roundish red spot in disc at $\frac{2}{3}$: cilia blackish. Hindwings elongate-ovate; pale red, semitransparent; a rather broad blackish hindmarginal fascia, thinly scaled on a patch below middle; cilia blackish; veins 4 and 5 separate.

Sydney and Goulburn, New South Wales; in October; two specimens (Coll. Raynor and Macleay).

146. *Hest. tricolor*, Walk.

(*Procris tricolor*, Walk. Bomb. 111, Butl. Ill. Het. I, pl. VI, 6.)

♂ ♀. 18-27 mm. Head black, in ♀ red on crown. Palpi and collar red. Antennæ black. Thorax black, spotted with white beneath, tips of patagia sometimes whitish. Abdomen black, beneath whitish-ochreous, three basal segments wholly whitish-ochreous except at apex above, anal segment with basal whitish-ochreous ring. Legs blue-black, anterior coxae white. Forewings extremely elongate-triangular, costa sinuate, apex rounded, hindmargin very obliquely rounded; blackish-fuscous; a hyaline streak beneath costa from near base to ⅓, acutely attenuated posteriorly; a hyaline median streak from near base, gradually dilated and becoming obsolete beyond middle of disc: cilia dark fuscous. Hindwings elongate-ovate; almost hyaline, very thinly scaled; an irregular suffused dark fuscous hindmarginal fascia, forming a blotch at apex, very narrow in middle, somewhat dilated towards anal angle; cilia dark fuscous; veins 4 and 5 separate.

Sydney, New South Wales; Fernshaw, Victoria; Deloraine, Tasmania; Mount Lofty, South Australia; in November and December, not uncommon. Mr. Masters informs me that it especially frequents the flowers of *Angophora.*

147. *Hest. rufiventris,* Walk.

(*Procris rufiventris,* Walk. Bomb. 110, Butl. Ill. Het. I, 15 pl. VI, 7.)

♂ ♀. 17-18 mm. Head, palpi, antennæ, thorax, and legs blackish. Abdomen orange, base and apex blackish. Forewings elongate-triangular, costa almost straight, apex rounded, hindmargin very obliquely rounded; wholly blackish. Hindwings oblong-ovate; wholly blackish, disc thinly scaled; veins 4 and 5 from a point or short-stalked.

Albany, West Australia; four specimens (Coll. Macleay).

43. PROCRIS, F.

Tongue well-developed. Antennæ in ♂ bipectinated, apex simple, sometimes considerably thickened (not in Australian species), in ♀ rather thick throughout. Palpi short, porrected, filiform, pointed. Posterior tibiæ without middle-spurs. Forewings with vein 1 furcate at base, 2 from about ¾, all veins separate. Hindwings with vein 1 c present, 4 absent or present, 3 rarely stalked with 4 or 5, 6 and 7 approximated at base, 8 anastomosing with upper margin of cell from before to beyond middle.

The structure of veins 3-5 of the hind-wings varies considerably in different species, but the differences appear specific only.

A. Abdomen very broad, strongly flattened 148. *dolens*
B. „ moderate.
a. Abdomen with lateral margins white ....149. *leucopleura.*
b. Abdomen with lateral margins not white.
1. Forewings with three pale spots 151. *trimacula*
2. „ unicolorous.
i. Forewings bluish or greenish.
* Hindwings with 3 and 5 from a point ....150. *coronias.*
** Hindwings with 3 and 5 remote.
† Hindwings ovate, evenly scaled ....155. *viridipulverulenta.*
†† Hindwings elongate-ovate, thinly scaled in disc below middle ..154. *apicalis.*
ii. Forewings without blue or green tinge.
* Forewings bright coppery 156. *cuprea.*
** „ blackish.
†. Abdomen bright green 152. *cyanota.*
†† „ bright coppery ....153. *subdolosa.*

Sect. A. Vein 4 of hindwings present.

148. *Procr. dolens*, Walk.

(*Procris dolens*, Walk. Bomb. 112, Butl. Ill. Het. I, 14, pl. VI, 4.)

♂ ♀. 13-14 mm. Head, palpi, antennæ, thorax, abdomen, and legs deep blackish-green or blackish-indigo; antennal pectinations 1½; abdomen broadly flattened. Forewings elongate, suboblong, somewhat dilated, costa gently arched, apex rounded, hindmargin obliquely rounded; deep blackish-green or blackish-indigo; cilia dark grey, tips pale. Hindwings elongate-ovate; blackish-grey, rather thinly scaled; veins 3 and 4 from a point or short-stalked, 5 remote.

Mount Macedon, Victoria; Campbelltown and Hobart, Tasmania; Mount Lofty, South Australia; in December, rather common.

Sect B. vein 4 of hindwings absent.

149. *Procr. leucopleura*, n. sp.

♀. 18-19 mm. Head, antennæ, and thorax dark fuscous, palpi and lower part of face white. Abdomen dark fuscous, lateral margins white. Legs white, tarsi fuscous. Forewings elongate, gradually dilated, costa posteriorly gently arched, apex rounded, hindmargin very obliquely rounded; dark fuscous; cilia paler towards tips. Hindwings elongate-ovate; dark fuscous; disc thinly scaled, becoming semitransparent towards base; veins 3 and 5 from a point.

Sydney, New South Wales; two specimens (Coll. Macleay).

150. *Procr. coronias*, n. sp.

♂ ♀. 14-17 mm. Head, palpi, antennæ, thorax, abdomen, and legs blackish-green or blackish-indigo; antennal pectinations 3. Forewings elongate-triangular, costa slightly arched, apex obtuse, hindmargin obliquely rounded; blackish-green or blackish-indigo: cilia dark grey, tips pale. Hindwings ovate; blackish-grey; disc rather thinly scaled, especially towards base; veins 3 and 5 from a point or short-stalked.

Maryborough, Queensland; Sydney, New South Wales; Mount Macedon, Victoria; in November, December, and March, common.

151. *Procr. trimacula*, Walk.

(*Procris trimacula*, Walk. Bomb. 110, Butl., Ill. Het. I, 13, pl. VI, 8.)

♂ ♀. 18-20 mm. Head metallic green, crown black. Palpi, antennæ, and legs blackish, antennal pectinations 6. Thorax black, collar and abdomen brilliant metallic coppery, anal tuft in ♂ whitish, in ♀ whitish-ochreous. Forewings elongate-triangular, costa nearly straight, apex rounded, hindmargin very obliquely rounded; blackish; three very cloudy obscure dull ochreous-whitish discal spots; first small, near base; second large, median, transverse, nearly reaching costa and inner margin; third small, towards apex: cilia blackish. Hindwings elongate-ovate; blackish; disc thinly scaled, semitransparent; veins 3 and 5 remote.

Richmond River, New South Wales; four specimens (Coll. Macleay).

152. *Procr. cyanota*, n. sp.

♂. 13 mm. Head, palpi, antennæ, thorax, and legs blackish; collar metallic coppery; antennal pectinations 6. Abdomen brilliant metallic green. Forewings very elongate-triangular, costa hardly arched, apex rounded, hindmargin obliquely rounded; blackish: cilia dark grey, tips pale. Hindwings elongate-ovate; blackish; disc thinly scaled, semi-transparent; veins 3 and 5 approximated at base.

Bathurst (2,300 feet) and Sydney, New South Wales; two specimens, in February and March.

153. *Procr. subdolosa*, Walk.

(*Procris subdolosa*, Walk. Suppl. 62.)

♂ ♀. 14-20 mm. Head, palpi, antennæ, and thorax blackish; face and orbits of eyes brilliant metallic green; collar brilliant metallic coppery; antennal pectinations 5. Abdomen metallic coppery, anal tuft of ♀ ochreous-yellow. Legs blackish, femora and posterior tibiæ metallic blue-green. Forewings very elongate-triangular, costa hardly arched, apex rounded, hindmargin rounded, rather strongly oblique; blackish. Hindwings elongate-ovate; blackish; disc thinly scaled, semi-transparent; veins 3 and 5 remote.

Cape York and Rockhampton, Queensland; Richmond River, Glen Innes (3,000 feet), Sydney, and Wollongong, New South

Wales; Melbourne, Victoria; Albany, West Australia; from September to December, common.

154. *Procr. apicalis*, Walk.

(*Procris apicalis*, Walk. Bomb. 111, Butl. Ill. Het. I, 14, pl. VI, 2; *Pollanisus sequens*, Walk. Bomb., 115, Butl. Ill. Het. I., 14, pl. VI, 3; *Procris Novæ-Hollandiæ*, Wallgr. Wien. Ent. Mon. 1860, 39).

♂ ♀. 16-18 mm. Head, palpi, antennæ, thorax, and legs brilliant metallic blue-green; antennal pectinations 5; tarsi dark fuscous. Abdomen brilliant metallic blue-green or coppery, anal tuft in ♀ ochreous-yellow. Forewings elongate-triangular, costa almost straight, apex rounded, hindmargin very obliquely rounded; brilliant metallic blue-green; cilia grey, basal half black. Hindwings elongate-ovate, blackish; a thinly scaled semi-transparent patch below middle of disc; veins 3 and 5 tolerably remote.

Sydney, New South Wales; in September, November, January, March, and April, very common.

155. *Procr. viridipulverulenta*, Guér.

(*Procris viridipulverulenta*, Guér., Mag. Zool. 1839, pl. XI, 3.)

♂ ♀. 21-24 mm. Head, palpi, antennæ, thorax, and legs brilliant metallic blue-green; antennal pectinations 5; tarsi dark fuscous. Abdomen brilliant metallic blue-green or coppery, anal tuft in ♀ ochreous-yellow. Forewings triangular, costa slightly arched, apex rounded, hindmargin obliquely rounded; brilliant metallic blue-green: cilia grey, basal half black. Hindwings ovate, blackish; veins 3 and 5 tolerably remote.

Duaringa, Queensland; Bathurst (2,500 feet), New South Wales; Deloraine, Tasmania; Adelaide, South Australia; in October and November, common.

156. *Procr. cuprea*, Walk.

(*Pollanisus cupreus*, Walk. Bomb. 115, Butl. Ill. Het. I, 15, pl. VI, 5.)

♂. 21-27 mm. Head, thorax, and abdomen metallic coppery, beneath metallic-green. Palpi and antennæ metallic green, pectinations 5. Legs dark coppery-fuscous. Forewings rather elongate-triangular, costa hardly arched, apex obtuse, hindmargin oblique, slightly rounded; metallic coppery; cilia fuscous, base dark purple-fuscous. Hindwings ovate; blackish, sometimes with a few metallic green scales towards anal angle; veins 3 and 5 remote.

Albany, West Australia; also from South Australia; several specimens (Coll. Macleay and Australian Museum).

APPENDIX.

The following specific descriptions remain unidentified; probably in some cases they refer to known species but are erroneously drawn up, in others the species may not be really Australian; I give abstracts of them for reference.

157. *Zygaena acharon*, F., Ent. Syst. 556. Tota cyanea, alis fuscis, obscuris, ano villoso, rufo. Probably a *Procris*.

158. *Lithosia plana*, Boisd., Voy. Astr. V, 209. Alis ant. cinereo-luteis, post. luteis, thorace cinereo, collari flavo.

159. *Lactura dives*, Walk. Bomb. 486. Forewings brown, with seven yellow spots; one near base, two before middle, three beyond middle, one near apex. Hindwings brown, towards base luteous.

160. *Bombyx curvata*, Don. Ins. N. H. Alis testaceis, ant. fasciola curvata punctisque nigris, post. basi roseis nigroque bifasciatis. Probably a *Spilosoma*.

161. *Themiscyra laetifera*, Walk. Suppl. 258. 36 mm. Whitish; head with a brown stripe on crown; antennæ red; thorax with anterior margin and a spot on patagia red, and a brown band connected behind with a broad brown stripe: forewings with some red lines, and some broad irregular contiguous brown streaks, forming two incomplete bands, connected on costa and inner margin: hindwings ochreous.

162. *Nudaria albida*, Walk. Suppl. 273. 20-24 mm. White; forewings with four slender bands; first and second widely interrupted, brown, second ochreous in front; third and fourth ochreous, third undulating, fourth composed of marginal streaks; two black points in disc.

163. *Eutane partita*, Walk. Char. Het. 64. I have not seen this description.

164. *Cyptasia egregiella*, Walk. Suppl. 1837. 20 mm. Head white, aeneous behind, ochreous between antennæ, an aeneous dot on face. Thorax white, collar edged with ochreous, an ochreous stripe containing a white dot in front. Abdomen ochreous, beneath white. Forewings aeneous, with some longitudinal ochreous streaks: two oblique incomplete irregular white bands; a few intermediate white spots on inner margin. Hindwings ochreous. Referred to the *Lithosiadae* by Butler, but very possibly erroneously.

165. *Lithosia pristina*, Walk. Suppl. 1885. 22 mm. Very pale ochreous; forewings narrow, thinly and minutely sprinkled with brown; hindwings brighter.

166. *Hydrusa humeralis*, Butl., Journ. Linn. Soc. 1876, 352. 29 mm. Differs from *H. annulata* by the orange patagia; second spot of hindwings large, almost touching first.

167. *Pallene elegans*, Butl., Trans. Ent. Soc. Lond. 1877, 334. 18 mm. Forewings chocolate-brown; a broad basal patch, transverse constricted band beyond middle, interrupted in centre to form two opposed conical spots, and costal margin at apex creamy-whitish with blackish borders; cilia grey, minutely spotted with ochreous. Hindwings pale ochreous, cilia darker; apex greyish. Head and collar white; thorax dark brown.

168. *Acontia* (*Philenora*, Ros.) *undulosa*, Walk. Noct. 797; Ros. Ann. Mag. N. H. 1885, 445. According to Rosenstock, the generic characters are as in *Mosoda*, but the forewings have vein 10 from a point with 9, and stalk of 7 and 8, 11 from anterior fourth of cell; antennæ of ♂ pectinated; tongue strong. I saw the type of this species, and remarked it as apparently unknown to me, but did not examine it; according to a rough sketch I made, the forewings are white, with blackish markings; three irregular

lines roughly parallel to hindmargin, first subbasal, second before middle, third at $\frac{3}{4}$; a costal streak from first to second; a discal dot before third; an irregular fascia from costa near apex to anal angle; cilia barred with blackish; hindwings yellowish, with an apical blackish spot. I know no species with the above generic characters.

The two following Indian species have been recorded as Australian, but I believe in error; at any rate the locality requires confirmation.

169. *Deiopeia syringa*, Cr. pl. 5, C.D. (Forewings banded with rosy; hindwings rosy.)

170. *Areas lactinea*, Cr. Only recorded by an error for *A. marginata*.

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Supplement.

Since writing the above, I have seen a species which agrees with Walker's description of *Lactura dives*, and is, I have little doubt, the one intended; it belongs to the *Tineina*, and may therefore be omitted entirely from this group.

The following two additional species have also come before my notice.

271. *Scaeodora chionastis*, n. sp.

♂. 15 mm. Head white, lower part of face and palpi whitish-ochreous. Antennæ whitish. Thorax white, patagia whitish-ochreous. Abdomen pale grey, sides and apex pale yellowish. Legs whitish-ochreous. Forewings elongate-triangular, costa moderately arched, apex obtuse, hindmargin almost straight, rather oblique; white; markings fuscous, very suffused and ill-defined; a triangularly dilated streak along anterior half of costa, its lower angle connected with inner margin before middle by a slender line, and with a spot on costa at $\frac{2}{3}$ by a narrow bar obtusely bent in disc; from this costal spot a slender irregular line to inner margin at $\frac{3}{4}$, rectangularly indented near inner margin; a moderate subterminal fascia from apex to anal angle: cilia white, with dark fuscous apical, median, and anal patches. Hindwings pale grey, purplish-tinged, sprinkled with pale brassy-yellow, especially towards base; cilia pale yellowish.

Sydney, New South Wales; one specimen in June.

44. Phragmatobia, Stph.

Tongue slender. Antennæ in ♂ filiform, evenly ciliated, with scattered somewhat longer cilia. Palpi moderate, porrected, loosely rough-haired. Thorax and femora hairy beneath. Forewings with vein 2 from $\frac{2}{3}$, 7 and 8 out of 9, 10 out of 9 near base. Hindwings with vein 6 and 7 from a point, 8 from middle.

Should be placed between *Areas* and *Deiopeia.*

172. *Phragm. interrupta*, L.

♂. 41 mm. Head, palpi, and thorax pale whitish-ochreous, rosy-tinged ; face dark fuscous ; thorax with a median longitudinal fusiform blackish stripe throughout. Antennæ whitish. Abdomen light rosy-crimson above, dark grey beneath, with dorsal and lateral series of small round black spots. Legs black, coxæ and femora ochreous-yellow above. Forewings very elongate-triangular, costa moderately arched, apex obtuse, hindmargin obliquely rounded ; whitish-ochreous, rosy-tinged ; a thick black streak, attenuated anteriorly, beneath lower median vein from near base to $\frac{4}{5}$, apex obliquely truncate above ; two black dots on transverse vein near extremities ; a narrow black longitudinal streak from close beyond lower dot, posteriorly somewhat bent upwards to hindmargin below apex : cilia whitish-ochreous, rosy-tinged. Hindwings and cilia grey, thinly scaled.

Cairns, Queensland ; one specimen (Coll. Macleay). Also from India.

NOTES ON SYNONYMY OF AUSTRALIAN MIRCO-LEPIDOPTERA.

By E. Meyrick, B.A., F.E.S.

The following synonymical corrections and additions, made by me from an examination of specimens in the British Museum, have been in one or two instances indicated elsewhere, but it will be convenient to give them together. The corrected synonymy of each species is here given in full.

PYRALIDIDAE.

1. *Balanotis recurvalis*, Walk.

Salma recurvalis, Walk. Cramb. 107; *Exacosmia rubiginosa*, ib. Suppl. 609; *Crambus melanospilellus*, ib. Suppl. 1759; *Balanotis recurvalis*, Meyr., Trans. Ent. Soc. Lond. 1884, 70.

CRAMBIDAE.

2. *Calamotropha delatalis*, Walk.

Crambus delatalis, Walk. Cramb. 176; *Chilo leptogrammellus*, Meyr., Proc. Linn. Soc. N.S.W. 1879, 207.

3. *Crambus cuneiferellus*, Walk.

Crambus cuneiferellus, Walk. Cramb. 175, Meyr., Proc. Linn. Soc. N.S.W. 1878, 189; *Crambus microphaeellus*, Walk. Suppl. 1758.

4. *Diptychophora ochracealis*, Walk.

Cataclysta ochracealis, Walk. Suppl. 1838; *Eromene præmaturella*, Meyr., Proc. Linn. Soc. N.S.W. 1878, 198; *E. dilatella*, ib. 199.

I note here that the whole of the Australian species formerly classified under *Thinasotia*, Hein., are to be referred to the genus *Hednota*, Meyr., differing from *Thinasotia* in having veins 6 and 7 of the hindwings remote, and the forehead with a more or less developed cone; with the exception of *T. lativittalis*, Walk., and *T. torrentella*, Meyr.

PHYCITIDAE.

5. *Eucarphia tritalis*, Walk.

Hypochalcia tritalis, Walk. Cramb. 47; *Crambus vetustellus*, ib. 176; *Eucarphia vulgatella*, Meyr., Proc. Linn. Soc. N.S.W. 1878, 207; *E. cnephaeella*, ib. 1879, 227.

6. *Epicrocis patulalis*, Walk.

Nephopteryx patulalis, Walk. Cramb. 70; *Pempelia rufitinctella*, Meyr., Proc. Linn. Soc. N.S.W. 1878, 203.

7. *Epicrocis oppositalis*, Walk.

Trachonitis oppositalis, Walk. Cramb. 41; *Pempelia caliginosella*, Meyr., Proc. Linn. Soc. N.S.W. 1879, 221.

8. *Epicrocis sublignalis*, Walk.

Trachonitis sublignalis, Walk. Cramb. 41; *Pempelia strigiferella*, Meyr., Proc. Linn. Soc. N.S.W. 1878, 202.

9. *Crocydopora cinigerella*, Walk.

Nephopteryx cinigerella, Walk. Suppl. 1719; *N. stenopterella*, Meyr., Proc. Linn. Soc. N.S.W. 1878, 200.

TORTRICIDAE.

10. *Tortrix copiosana*, Walk.

Goboea copiosana, Walk. Suppl. 1805; *Tortrix ceramicana*, Meyr., Proc. Linn. Soc. N.S.W. 1881, 512.

11. *Tortrix humerella*, Walk.

Crambus humerellus, Walk. Suppl. 1758; *Tortrix centurionana*, Meyr., Proc. Linn. Soc. N.S.W. 1881, 518.

12. *Arotrophora arcuatalis*, Walk.

Scopula arcuatalis, Walk. Suppl. 1474; *Crambus submarginellus*, ib. 1760; *Eromene transcissella*, ib. 1762; *Arotrophora arcuatalis*, Meyr., Proc. Linn. Soc. N.S.W. 1881, 530.

CONCHYLIDIDAE.

13. *Oistophora mediella*, Walk.

Enopa mediella, Walk. Suppl. 1738; *Oistophora ptterocosmana*, Meyr., Proc. Linn. Soc. N.S.W. 1881, 699.

OECOPHORIDAE.

14. *Placocosma resumptella*, Walk.

Oecophora resumptella, Walk. Tin. 681; *Placocosma hephaestea*, Meyr., Proc. Linn. Soc. N.S.W. 1883, 333.

15. *Antidica pilipes*, Butl.

Latometus pilipes, Butl., Ann. Mag. N. H. 1882, 102; *Antidica eriomorpha*, Meyr., Proc. Linn. Soc. N.S.W. 1883, 382.

GLYPHIPTERYGIDAE.

16. *Hypertropha tortriciformis*, Gn.

Heliodes tortriciformis, Gn. Noct. VI, 198, pl. IX, 13; *Orosana desumptana*, Walk. Tort. 460; *Anthoecia divitiosa*, ib. Suppl. 771; *Hypertropha thesaurella*, Meyr., Proc. Linn. Soc. N.S.W. 1880, 209.

MISCELLANEA ENTOMOLOGICA, No. II.

THE GENUS LIPARETRUS.

By William Macleay, F.L.S., &c.

The first paper under the above heading which I communicated to this Society at its April meeting, dealt only with the genus *Diphucephala*, a group of the Melolonthidæ exclusively Australian. The present paper will be devoted to another group of the Melolonthidæ also exclusively Australian. The genus *Liparetrus* is placed by Lacordaire in his Sub-tribe Sericoides,—which differs from his Sub-tribe Sericides in having the labrum distinct from the clypeus,—and in his group Heteronycides, which is characterized by having the labrum short, sub-horizontal, and a little emarginate.

The genus was first characterized by Guérin-Méneville, in his Entomology of the Voyage of the Coquille. However, the characters I now give are chiefly taken from Lacordaire's "Genera des Coléoptères."

Genus, Liparetrus.

Mentum almost as long as broad, a little narrowed at the base, cut obliquely, and widely impressed in front, the labial part of the same width and a little emarginate.

Maxillæ robust the external lobe armed with four or five teeth.

Palpi.—The last joint of the labial, sub-cylindrical, that of the maxillary, thick and oval.

Clypeus separated from the forehead by a sinuous line, of a transversal square form, bordered in all parts, the anterior border square, rounded or sinuous.

Eyes moderate, slightly prominent.

Antennæ short, of nine or eight joints, the three last forming a large sub-oval club.

Thorax transversal, narrowed in front, semi-circularly rounded at the base.

Scutellum small, of curvilinear triangular form.

Elytra very short, flat or little convex, rounded behind, generally not covering the penultimate segment of the abdomen.

Legs moderate, the posterior thighs strong; the anterior tibiæ strongly tridentate, or sometimes bidentate, the terminal tooth not perpendicular, the four posterior tibiæ carinated and spiny; the tarsi slender, longer than the tibiæ, their claws feebly arcuated and simple.

Abdomen very thick.

Propygidium very large, often entirely exposed; *pygidium* moderate, perpendicular, a little convex, of curvilinear triangular form, as long as broad.

The very large penultinate segment of the abdomen or propygidium of Lacordaire, is the most marked distinguishing feature of this genus. The species are very numerous, and are found in all parts of Australia, feeding on the leaves of the various species of *Eucalyptus.* The larvæ have not been observed.

The number of species coming within the limits of the genus, as defined above, is so great, and their differences so minute, that to characterize the whole of them so as to render the work of identification simple, I find it necessary to sub-divide the genus into sections and sub-sections founded upon characters of more or less importance, but all convenient and easy of observation. A few explanatory observations on the points in the anatomy of these insects, which are most useful in the determination of the species, will, I believe, be found useful.

By far the greater number of species of the genus *Liparetrus* have nine joints to the antennæ, the others have eight. Blanchard (1) divides the genus into 2 sections founded on this character, while Burmeister (2) merely uses it as a specific character. In this matter I follow Blanchard, as I find the 8-jointed species, almost without exception, of such uniform appearance and so different from the 9-jointed ones, that I think they might well be placed in a separate genus. Burmeister on the other hand, makes his subdivision of the genus depend chiefly on what seems to be an unimportant character—the relative length of the 1st and 2nd joints of the posterior tarsi. In determining the species, I look upon this character as useful, but as the character of a group it is bad, as it separates species evidently closely related. But others of Burmeister's sub-divisions founded on the form of the clypeus in the male are undoubtedly good, and these, with some modifications and additions, I have adopted in this paper under the title of Sub-sections.

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(1) Coll. Ent. Mus. Paris, p. 103.
(2) Handbuch der Entomologie IV., p. 194.

Further sub-divisions of these sub-sections are founded on the variations in the clothing of the species as "villose, glabrous, scabrous, velvety, sericeous," &c. Other anatomical points, some of them sexual, might be enumerated as valuable for identification, but these I think will be readily ascertained by attention to the descriptions. I propose then to group all the species of the genus as follows:—

SECTION I.

ANTENNÆ 9-JOINTED.

SUB-SECTION I.

Clypeus of male terminating in a broad acutangular lamina.

Liparetrus phænicopterus, Germ.
„ xanthotrichus, Blanch.
„ marginipennis, Blanch.
„ fulvohirtus, Macl.
„ Germari, n. sp.
„ Mastersi, n. sp.
„ capillatus, n. sp.
„ nitidipennis, n. sp.
„ pilosus, Macl.

Liparetrus villosicollis, n. sp.
„ flavopilosus, Macl.
„ rufiventris, Macl.
„ nigrinus, Germ.
„ ater, n. sp.
„ angulatus, n. sp.
„ comatus, n. sp.
„ nigrohirtus, n. sp.
„ callosus, n. sp.

Liparetrus Mitchelli, n. sp.

Sub-section II.

Clypeus with the apex more or less tridentate.

Liparetrus Kreusleræ, n. sp.
„ atratus, Burm.
„ iridipennis, Germ.
„ tristis, Blanch.
„ acutidens, n. sp.
Liparetrus obtusidens, n. sp.
„ tridentatus, Macl.
„ asper, n. sp.
„ bituberculatus, n. sp.
„ sylvicola, Fab.
Liparetrus parvidens, n. sp.

Sub-section III.

Clypeus more or less rounded in both sexes.

a. Upper surface opaque, velvety, and villose.

Liparetrus discipennis, Guér.
„ discoidalis, Macl.
„ albohirtus, Mast.
„ sericeipennis, n. sp.
„ montanus, n. sp.
Liparetrus canescens, n. sp.
„ occidentalis, n. sp.
„ assimilis, n. sp.
„ holosericeus, n. sp.
„ pruinosus, Burm.

b. Upper surface more or less villose and nitid.

Liparetrus erythropterus, Blanch.
„ ubiquitosus, n. sp.
„ glabripennis, n sp.
„ luridipennis, n. sp.
„ rugosus, n. sp.
„ collaris, n. sp.
„ concolor, Erichs.
Liparetrus criniger, n. sp.
„ salebrosus, n. sp.
„ convexiusculus, Macl.
„ rubicundus, Macl.
„ propinquus, n. sp.
„ lævis, Blanch.
„ ebeninus, n. sp.

c. Upper surface glabrous.

Liparetrus rubefactus, n. sp.
„ atriceps, Macl.
„ rufipennis, Macl.
„ ovatus, n. sp.
„ sericeus, Macl.
„ micans, n. sp.
„ parvulus, Macl.
„ pallidus, Macl.
„ lævatus, Macl.
Liparetrus impressicollis, n. sp.
„ nigriceps, n. sp.
„ opacicollis, n. sp.
„ rotundipennis, n. sp.
„ convexior, n. sp.
„ picipennis, Germ.
„ obscurus, n. sp.
„ nitidior, n. sp.
„ latiusculus, Macl.
Liparetrus globulus, n. sp.

d. Body squamose.

Liparetrus vestitus, Blanch.
„ nudipennis, Germ.
Liparetrus squamiger, n. sp.
„ subsquamosus, n. sp.
Liparetrus rotundiformis, n. sp.

SUB-SECTION IV.

Clypeus emarginate.

Liparetrus abnormalis, n. sp.
Liparetrus simillimus, n. sp.
Liparetrus Kennedyi, n. sp.

SECTION II.

ANTENNÆ 8-JOINTED.

Liparetrus monticola, Fab.
„ ferrugineus, Blanch.
„ erythropygus, Blanch.
„ depressus, Blanch.
„ poverus, Blanch.
„ valgoides, Blanch.
„ humilis, Blanch.
Liparetrus unicolor, Mast.
„ pygmaeus, Burm.
„ Cookii, n. sp.
„ hispidus, n. sp.
„ Burmeisteri, n. sp.
„ ordinatus, n. sp.
„ Mæchidioides, n. sp.
Liparetrus striatipennis, n. sp.

I now proceed to the description of the species in each group.

SECTION I.

SUB-SECTION I.

Clypeus of the male prolonged into a broad acutely-angled lamina. Body villose.

1. LIPARETRUS PHÆNICOPTERUS, Germ.

Linn. Ent. III. 1848, p. 192; Burm. Handb. IV. 2, p. 197.

Black, densely flavo-pilose, the hair on the thorax somewhat darker, the elytra ferruginous, dispersedly punctate, the clypeus of the male elevated at the apex and angularly truncate.

Length, 4 lines.

These characters are scarcely sufficient to distinguish this species from its allies, and as I regard it as the type of a large group, I append a translation of Germar's original detailed description.

Head ovate, black, opaque, rugosely-punctate, yellowish-hairy, with the clypeus elevated at the margin, truncate, in the male produced into a lamina emarginate on both sides before the apex. Labrum transverse, emarginate at the apex. Palpi ferruginous. Antennæ ferruginous, of 9 joints, the second joint almost as long as the first, the following short, coarctate, equal, the club brown, triphyllate. Thorax obsoletely canaliculate, punctate, black, the upper surface brownish—the sides and under surface yellowish-hairy. Scutellum punctate, black. Elytra rather convex, each rounded at the apex, ferruginous, more sparsely villose, with three geminate punctate striæ, and the interstices more strongly but sparingly punctate. Pygidium large, black, rugosely punctate and densely yellowish villose. Body beneath piceous-black, yellowish villose. Legs piceous, the anterior tibiæ strongly tridentate, the anterior tarsi thickened in the male, and the anterior claws furnished at their base with a setigerous tubercle; the first joint of the posterior tarsi shorter than the second, all the pairs of claws equal.

The habitat of this species is South Australia, where it seems to be abundant and widely distributed.

2. LIPARETRUS XANTHOTRICHUS, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 103.

Ovate, black, covered with long yellow villose hair. Head punctate, the clypeus of the male broader in front than behind and reflexed, acutely angled, the angles projecting laterally, shallowly emarginate in front and sinuated a little between the emargination and the angles; that of the female narrowed at the apex and reflexed, with the angles obtuse. Antennæ testaceous, the club black. Thorax black, opaque, punctate. Elytra dark ferruginous-red, subnitid, punctate, not striate, more thinly villose than the rest of the body, with the base, suture, lateral margins and apex black, the puncturation in the female more distinct. Legs piceous-red, anterior tibiæ tridentate, anterior tarsi in the male much thickened, and the first joint of the posterior tarsi as long as the second, pygidium and propygidium very densely villose.

Length, 4 lines.

Hab.—New South Wales.

3. LIPARETRUS MARGINIPENNIS, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 103.

Like *L. xanthotrichus* but smaller, and sparingly blackish-villose on the upper surface and cinereo-villose beneath. The head is black and rugosely punctate, the clypeus in the male is truncate and rectangular, with the angles a little reflexed, in the female it is rounded and slightly reflexed all round. Antennæ testaceous-red, the club black. Thorax black, opaque, punctate, rather densely villose. Elytra red, subnitid, thinly villose, rather coarsely punctate, with three scarcely visible elevated lines on each elytron, the base, suture and margins black. Legs piceous-red, the anterior tibiæ strongly tridentate; the first joint of the anterior tarsi a little prolonged on the inner lobe, the first joint of the posterior tarsi much shorter than the second, abdomen black, punctate, cinereo-pilose.

Length, 3½ lines.

Hab.—New South Wales.

This species has a wide range throughout the inland Districts, especially in the southern parts of New South Wales.

4. LIPARETRUS FULVOHIRTUS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II., p. 189.

Head and thorax black, densely punctate, and closely covered with erect soft pale-red hairs, the latter with the punctures coarser than those of the head, and with the median line visible. Elytra red except on the basal margin, separately rounded and rather dehiscent at the apex, thinly clothed with erect hairs, and coarsely and irregularly punctate, with the three geminate striæ rather indistinct. Pygidium and abdominal segments black, punctate, and thinly clothed with long light-coloured hairs. The under side of the thorax densely clothed with hairs of the same pallid hue. Legs red.

Length, 3½ lines.

Hab.—Gayndah, Port Denison, Queensland generally.

The above is my original description of this species, I have now only to add,—Anterior tibiæ tridentate, inner lobe of first joint of anterior tarsi prolonged, and clypeus of male reflexed at the apex, acutely angled, and very slightly emarginate on the apical edge. The first joint of the posterior tarsi shorter than the second.

5. Liparetrus Germari, n. sp.

Very like *L. phœnicopterus* but much larger, the clypeus of the male broad, slightly reflexed, and nearly quite truncate, the angles not very acute. Head and thorax black, densely punctate and thinly covered with long cinereous hairs, the median line of the thorax quite traceable. Elytra red, tolerably nitid, villose at the base only, strongly but rather thinly punctate, with three geminate striæ, the first very distinct. Abdomen black, cinereo-villose, the hair long and rather thin. Legs piceous, the anterior tibiæ strongly tridentate, the anterior tarsi much thickened, the spur on the inner apex of the anterior tibiæ much curved, and the first joint of the posterior tarsi much shorter than the second.

Length, 5½ lines.

Hab.—South Australia.

6. Liparetrus mastersi, n. sp.

Resembles the last species (*L. Germari*) in size and general appearance. It differs in having the clypeus of the male slightly emarginate in front and acutely angled, in having the head and thorax more minutely and thinly punctate, and the latter without trace of median line; the clothing is also shorter, sparser, and of a more yellow tinge. The elytra are more nitid, and of a more ferruginous-red, the puncturation is thinner and stronger, and the geminate striæ are still more marked. The legs are nitid, the anterior tibiæ very strongly tridentate, the inner spur nearly straight, and the anterior tarsi of the male slightly thickened.

Length, 5½ lines.

Hab.—Salt River, King George's Sound.

Mr. Masters found these insects in vast numbers in the summer of 1865. They passed him in masses on the wing during the space of two hours, all flying in the same direction. Salt River is about 100 miles inland from King George's Sound.

7. LIPARETRUS VILLOSICOLLIS, n. sp.

Like *L. marginipennis.* Head black, finely and densely punctate, densely villose, the hair of a lightish hue, the clypeus of the male broadened at the apex, acutely angled, reflexed and emarginate on the apex. Thorax black, punctate, densely brownish-villose, and slightly impressed on the median line. Elytra ferruginous-red, black on the base, nitid, irregularly punctate, with three geminate striæ scarcely distinct, and clothed with long gray hairs on the base, and very short hairs on the rest of the surface. Propygidium black, finely punctate, very convex, nitid and thinly clothed with long cinereous hair. Legs piceous-red, the first joint of the anterior tarsi with the inner lobe strongly prolonged as in *L. fulvohirtus ;* anterior tibiæ strongly tridentate ; the first joint of the posterior tarsi half the length of the second.

Length, 3½ lines.

Hab.—Southern Districts of New South Wales, Murrumbidgee.

I have seen what I look upon as merely a small variety of this species from South Australia.

8. LIPARETRUS FLAVOPILOSUS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II. p. 190.

Head and thorax black, finely punctate, and covered with long, yellowish, somewhat decumbent hair; the clypeus of the male square, acutely angled and reflexed, and very slightly emarginate in the middle ; the thorax has the median line distinct near the base. Elytra testaceous-red with the basal margin black, nitid, rather thinly clothed with hair, and irregularly punctate, with the three geminate striæ rather indistinct. Pygidium and under surface of body black and flavo-pilose. Anterior tibiæ strongly tridentate. The first joint of anterior tarsi with the inner lobe prolonged, the first joint of the posterior tarsi much shorter than the second.

Length, 3½ lines.

Hab.—Gayndah, Queensland.

9. LIPARETRUS RUFIVENTRIS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II. p. 191.

Head and thorax black, punctate and covered with long, reddish-yellow, somewhat decumbent hair, the former with the clypeus of the male acute and prominent at the angles and reflexed along the entire margin; the latter with the median line distinct almost throughout. Elytra of a rather dark red, nitid, sparingly pilose and coarsely and irregularly punctate, with the geminate striæ distinct. Pygidium, under surface of body, and legs red and cinereo-villose. Anterior tibiæ tridentate, the teeth strong, acute, and recurved, no enlargement of inner lobe of first joint of anterior tarsi, the first joint of posterior much shorter than the second.

Length, 3½ lines.

Hab.—Gayndah, Queensland.

10. LIPARETRUS NIGRINUS, Germ.

Linn. Ent. III. p. 193; Burm. Handb. IV. p. 198.

Black, subnitid, greyish-villose. Head rugosely punctate, the clypeus of the male broad, truncate, rectangular, slightly reflexed; of the female rounded. Antennæ ferruginous, the club brown. Thorax densely punctate and villose. Elytra of a somewhat piceous-black, convex, deeply and thickly punctate, with a line near the suture, and two slightly elevated lines on each side, the outer one least distinct. Pygidium punctate and villose. Legs black, tarsi reddish, the anterior tibiæ tridentate, and the spine or spur on their inner apex very short. The first joint of the posterior tarsi shorter than the second.

Length, 3½ lines.

Hab.—South Australia.

Burmeister describes this species as having only 8 joints to the antennæ, and the clypeus of the male tridentate; in both cases he is wrong, and has probably mistaken Germar's species for some other.

11. LIPARETRUS ATER, n. sp.

Black, rather thinly fulvo-villose above, cinereo-villose beneath. Head minutely and densely punctate, clypeus of the male emarginate in front, acutely angled and projecting laterally. Thorax opaque, very minutely but not densely punctate. Elytra piceous-black, nitid, free of hair except at the base, coarsely and irregularly punctate, with three geminate striæ on each. Propygidium nitid, finely punctate, thinly cinereo-villose. Legs piceous-black, anterior tibiæ piceous-red, strong, tridentate, the tarsi of the four anterior legs reddish and strong, the anterior claws furnished with a setigerous tubercle as in *L. phœnicopterus*. The first joint of the posterior tarsi much shorter than the second.

Length, 5 lines.

Hab.—South Australia.

12. LIPARETRUS ANGULATUS, n. sp.

Head black, densely fulvo-villose, the clypeus of the male reflexed and very slightly emarginate at the apex, with the angles acute, and produced laterally. Thorax black, sericeous, very minutely punctate, with the median line broadly impressed at the base, and with a frill of long hairs at the apex and sides. Elytra red, sub-nitid, iridescent and thinly punctate, with three geminate striæ. Under surface black, clothed with long ashen hair, the pygidium almost glabrous, minutely punctate. Legs piceous, the anterior tibiæ very strongly tridentate, the anterior tarsi slightly thickened in the male, the first joint of the posterior tarsi as long as the second.

Length, 3 lines.

Hab.—New South Wales.

13. LIPARETRUS CAPILLATUS, n. sp.

Head and thorax black, subnitid, punctate, brownish-villose, the clypeus of the male truncate and reflexed at the apex, with the angles acute but not produced laterally. Elytra piceous-red, nitid, and rather strongly punctate, with four geminate striæ. Body beneath and pygidium cinereo-villose. Legs piceous, anterior tibiæ tridentate. Anterior tarsi slightly thickened in the male, the first joint of the posterior tarsi much shorter than the second.

Length, 3½ lines.

Hab.—King George's Sound.

14. LIPARETRUS COMATUS, n. sp.

This species is very like *L. marginipennis.* The clypeus of the male is broadly emarginate at the apex, the hair on the thorax is longer, the elytra are more distinctly sculptured, the geminate striæ being very distinct and the interstices being marked with large thinly-placed punctures; they are also of a lighter and more nitid red, and the base and sides are much more narrowly margined with black. The inner lobe of the first joint of the anterior tarsi of the male is prolonged as in *L. fulvohirtus*; the first joint of the posterior tarsi is one half the length of the second.

Length, 4 lines.

Hab.—South Australia (Interior).

15. LIPARETRUS NITIDIPENNIS, n. sp.

It is with some doubt that I place this species in this subdivision, the clypeus, though truncate and angled, being notched behind the angle so as to narrow the apex very much. The whole upper surface is glabrous; the head and thorax are black and finely punctate. The elytra are of a deep red, with black base, nitid, thinly punctate, with geminate striæ minutely punctate. The under surface black and cinereo-villose, the hair thin on the pygidium. Legs piceous-black, strong, the anterior tibiæ strongly tridentate, the first joint of the posterior tarsi less than half the length of the second.

Length, 4 lines.

Hab.—South Australia.

16. LIPARETRUS NIGROHIRTUS, n. sp.

Fulvous or brownish-villose on the upper surface, cinereo-villose beneath. Head and thorax black, densely punctate, the clypeus of the male broad, truncate and slightly reflexed at the apex, the angles projecting laterally. Elytra of a deep dark red margined all round with black, and somewhat variolose-punctate. Legs piceous, anterior tibiæ tridentate, the teeth short, the tarsi thick, the first joint of the posterior tarsi nearly as long as the second.

Length, 3 lines.

Hab.—Queensland.

17. LIPARETRUS CALLOSUS, n. sp.

Entirely black, nitid, brownish-villose on the upper surface, cinereo-villose beneath. Head densely and finely rugose-punctate, the clypeus in the male large, reflexed and very slightly emarginate on the apex, with the angles acute. Thorax finely and rather rugosely-punctate, without trace of a median depression. Elytra rugosely-punctate, the geminate striæ scarcely or not traceable, with a piceous-red blotch on the apical callus of each elytron, extending upwards more or less in the direction of the humeral angle. The propygidium is large, nearly half-covered by the elytra, and with the pygidium, is finely punctate. Legs piceous, the anterior tibiæ lightly tridentate, the anterior tarsi thick, the posterior with the first joint much shorter than the second.

Length, 3 lines.

Hab.—Sydney (Aust. Mus.)

18. LIPARETRUS PILOSUS, Macl.

Trans Ent. Soc. New South Wales, II. p. 190.

Head black, punctate, densely villose, with the clypeus of the male broad, reflexed, and acutely pointed outwards at the angles. Thorax also black, densely punctate, and thickly covered with long erect soft light-brown hairs, and with the median line marked at the base. Elytra very dark-red with the suture, base, and lateral margins black, coarsely and irregularly punctate, clothed with erect hairs not quite so thick or so long as on the thorax, and separately rounded at the apex. Pygidium and under surface of body black, punctate and densely clothed with long ashen pubescence. Tarsi reddish, the anterior thickened, the posterior with their first and second joints about equal.

Length, $3\frac{1}{4}$ lines.

Hab.—Gayndah.

19. LIPARETRUS MITCHELLI, n. sp.

Head black, punctate, densely brownish-villose, antennæ reddish with the tip of the club brown, the clypeus of the male rectangular and considerably emarginate on the apex. Thorax black, punctate, densely fusco-villose, the median line just traceable. Elytra chesnut-red, nitid, thinly but strongly punctate, with the geminate striæ indistinct, narrowly margined with black at the base, and moderately cinereo-villose. Body black with the pygidium densely clothed with long soft erect white hairs. Legs reddish, the anterior tibiæ strongly tridentate, the anterior tarsi thick with the first joint prolonged on the inner apex, and the posterior tarsi with the first joint less than half the length of the second.

Length, 4 lines.

Hab.—Victoria River.

A single specimen in the Macleay Museum, labelled "Mitchell's Exp., V.R."

SUB-SECTION II.

Clypeus of both sexes, or of the male only, more or less tridendate at the apex.

20. LIPARETRUS KREUSLERÆ, n. sp.

Black, nitid, beneath cinereo-villose. Head fulvo-villose, punctate, the clypeus of the male bi-emarginate, leaving the middle and the two angles as short obtuse prominences, in the female the angles are more rounded. Thorax finely and densely punctate, free from hair except on the lateral margins, and with a fine dense whitish pubescence on the basal margin, the median line lightly impressed. Elytra convex and punctate, with three distinct geminate striæ, Pygidium and propygidium densely and minutely punctate, the former with a smooth central keel. Legs piceous, anterior tibiæ tridentate externally, the spine at the inner apex short, the anterior tarsi thick, the first joint of the posterior tarsi a little shorter than the second, and the ungues of all the tarsi only slightly diverging.

Length, 4 lines.

Hab.—South Australia.

21. LIPARETRUS ATRATUS, Burm.

Handb. der Ent. IV. 2, p 196.

Black, sericeous, thickly and coarsely punctate, the clypeus reflexed and sharply tridentate in the male, less so in the female, the clypeal suture curved upwards in the middle. The thorax with the median line marked behind. Elytra distinctly striated, glabrous. The body beneath is cinereo-villose, the hairs on the head and thorax are blackish. The anterior tibiæ are reddish-brown, and strongly tridentate, the tarsi are thicker in the male than in the female.

Length, 2½ lines.

Hab.—Tasmania and South Australia.

I believe I know this species and have it from South Australia. It is distinct, as Burmeister says, from *iridipennis* Germ. I do not, however, add anything to Burmeister's description, as my South Australian insects may be specifically distinct, and I should only be making confusion worse confounded by giving additional characters which may really not apply to the species.

22. LIPARETRUS IRIDIPENNIS, Germ.

Linn. Ent. III. p. 194; Burm. Handb. der Ent. IV. 2, p. 196; *L. obscurus*, Homb. and Jacq. Voy. Pole Sud, pl. 8, fig. 15; *L. sylvicola*, Blanch. (not Fab.) Voy. Pole Sud, IV. p. 127.

Entirely black, opaque, and more or less iridescent all over, but chiefly on elytra and propygidium. The upper surface is glabrous, the under cinereo-villose. The head is very minutely punctate, impressed broadly and shallowly in the middle, and with the clypeus in the male broad, reflexed, and obtusely tridentate on the apex, in the female rounded and not dentate. The thorax is almost velvety, thinly punctate and lightly impressed on the median line. Elytra iridescent and punctate, with the geminate striæ distinct. Body beneath cinereo-villose, the hairs on the abdominal segments thin and decumbent, the propygidium and pygidium glabrous, opalescent, and minutely punctate, each puncture appearing to carry a minute scale. Legs reddish, the anterior tibiæ tridentate, the first joint of the posterior tarsi twice the length of the second.

Length, 3½ lines.

Hab.—South Australia.

23. Liparetrus sylvicola, Fab.

Syst. Ent. p. 39; Burm. Handb. IV. p. 198; *L. convexus*, Boisd. Voy. Astrol. Col. p. 209.

Black, subnitid. Head and thorax clothed with long black villose hairs, the former densely and minutely punctate except on the vertex, the clypeus broad at the apex and very slightly bisinuate, the puncturation of the thorax thin and minute, with the median line marked. Elytra glabrous, punctate, with three geminate striæ. Under surface and pygidium cinereo-villose, the latter finely punctate. Legs piceous-red, the anterior tibiæ tridentate, the teeth obtuse and flattened, all the claws close, not distended. First joint of posterior tarsi rather longer than the second.

Length, 3 lines.

Hab.—Victoria.

24. Liparetrus tristis, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 104.

The upper surface entirely free from hair, and of a sericeous opaque black, beneath densely cinereo-villose. Head and thorax densely and minutely punctate, each puncture containing a very minute greyish scale, the clypeus a little tridentate on the apex, and the base of the thorax ciliated with short white hair. Elytra punctate and minutely squamate, a little iridescent, with three geminate striæ. Propygidium and pygidium densely covered with greyish scales. Legs piceous, anterior tibiæ tridentate, teeth not strong, a dense tuft of hair on the under surface of the first joint of anterior tarsi, less on the others, first joint of posterior tarsi equal in length to the second.

Length, 3 lines.

Hab.—King George's Sound.

25. LIPARETRUS TRIDENTATUS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II. p. 191.

Head black, punctate, and clothed with erect dullish yellow hair, with the clypeus armed in front with three recurved teeth. Thorax black, opaque, subsericeous, finely punctate and villose in front. Elytra of an opaque subsericeous-red, with the punctures rather shallow, and the geminate striæ tolerably distinct. Under surface black, cinereo-villose, the propygidium and pygidium large, nitid, finely punctate and very sparingly villose. Legs piceous, anterior tibiæ tridentate, first joint of posterior tarsi much longer than the second.

Length, 2½ lines.

Hab.—Gayndah.

26. LIPARETRUS ASPER, n. sp.

Elongate-ovate, black, subnitid. Head densely punctate, with blackish-villose hairs, the clypeus very slightly bisinuate at the apex. Thorax thinly and finely punctate, with a frill of long erect black hairs on the base, apex, and sides Elytra finely and rugosely punctate, the geminate striæ indistinct. Body beneath densely cinereo-villose, more thinly on the abdominal segments, and very sparingly on the pygidium, which is punctate and slightly carinate. Legs piceous, the anterior tibiæ tridentate, the spur on the inner apex long, moderately strong and slightly curved. Claws rather divergent, first joint of posterior tarsi considerably longer than the second.

Length, 3 lines.

Hab.—New South Wales.

27. LIPARETRUS BITUBERCULATUS, n. sp.

Ovate, sub-opaque. Head black, thinly villose, and densely punctate, with two minute rounded tubercles in the centre of the forehead, the suture of the clypeus much arched in the middle, and the apex tridentate. Thorax black, very minutely punctate, free from hair except at the sides. Elytra of a slightly sericeous ferruginous-red, rather indistinctly punctate and geminate-striate, and more or less deeply tinged with black at the base and margins. Body beneath black, sparingly cinereo-villose, the propygidium exposed, and with the pygidium of an obscure black or very dark red colour. Legs piceous, the anterior tibiæ tridentate, first joint of posterior tarsi longer than the second.

Length, 2½ lines.

Hab.—South Australia.

28. LIPARETRUS ACUTIDENS, n. sp.

Ovate, fulvo-villose on head and thorax, cinereo-villose beneath. Head black, punctate, the clypeus terminating in three acute reflexed teeth. Thorax of a velvety opaque-black, with the median-line shortly impressed near the base. Elytra of an iridescent yellow, nitid, very finely punctate, with three geminate striæ of rather coarser punctures. Abdomen black, punctate, propygidium half-covered by the elytra. Legs piceous, the anterior reddish, the anterior tibiæ tridentate, the first joint of the posterior tarsi almost twice the length of the second.

Length, 2 lines.

Hab.—Wide Bay.

One specimen (Australian Museum). This species might, at first sight, be taken for a small specimen of *D. tridentatus*; it differs, however, as the description will show, very widely.

29. LIPARETRUS PARVIDENS, n. sp.

Oblong-oval. Head black, finely and rugosely punctate, fulvo-villose, the clypeus large, reflexed, and slightly bisinuate at the apex, showing the slightest possible tridentation. Thorax black more thinly punctate, and villose except on the middle of the disc. Elytra dark red with blackish base, nitid, punctate, with the geminate striæ distinct. Body beneath piceous, cinereo-villose, the propygidium and pygidium large, finely punctate, and of a dark-red colour. Legs piceous-red, the anterior tibiæ tridentate, the first joint of the posterior tarsi slightly longer than the second.

Length, 3½ lines.

Hab.—Cleveland Bay (Australian Museum).

30. LIPARETRUS OBTUSIDENS, n. sp.

Oblong-ovate, nitid, densely fusco-villose on the head and thorax, cinereo-villose beneath. Head black, punctate, the clypeus large, and reflexed with three distinct rounded prominences on the apex. Thorax black, somewhat coarsely punctate, the median line impressed on the base only. Elytra red with the base rather deeply margined with black and the suture very narrowly, and punctate with the geminate striæ rather indistinct. Body beneath black, the propygidium and pygidium large, finely and transversely punctate, and thinly clothed with long whitish hairs. Legs piceous-red, the anterior tibiæ tridentate, the first joint of the posterior tarsi longer than the second.

Length, 3¼ lines.

Hab.—Bombala (Australian Museum).

SUB-SECTION III.

Clypeus more or less rounded in both sexes.

a. Body above opaque, velvety, and villose.

31. LIPARETRUS DISCIPENNIS, Guér.

Voy. Coquille, Col. p. 90, Pl. 3, fig. 10; Burm. Handb. IV. p. 195.

Velvety-black above, excepting the disc of each elytron which is of a sericeous-orange colour, the under surface is of a nitid black, the antennæ excepting the club, the palpi, and the anterior legs are red, the whole covered with long, soft, erect hairs, nearly black on the back, and longer and of a whitish colour beneath. The head is densely punctate, the suture of the clypeus deeply impressed and arcuate. Thorax broader than the length, rounded on the sides and considerably narrowed at the base and apex. Elytra obsoletely striate-punctate. Propygidium very large, convex, rather thinly villose and minutely punctate. Anterior tibiæ faintly bidentate, posterior tarsi with the first joint one half longer than the second.

Length, 3 lines.

Hab.—New South Wales, and South Australia.

This is the oldest known species of the genus, and is found abundantly over a large portion of Australia. About Sydney it is one of the earliest harbingers of spring, making its appearance on sunny days as early as the last week in July.

32. LIPARETRUS DISCOIDALIS, Macl.

Trans. Ent. Soc. New South Wales, Vol. I. p. 129.

Very like *L. discipennis*, but differs in being smaller, in the suture of the clypeus being less impressed and straighter, in the hair on the upper surface being whitish, in the discal orange patch on the elytra being smaller and more basal, in having a large fringe of white cilia at the base of the propygidium or penultimate segment of the abdomen, in the reddish hue of the pygidium, and in the first joint of the posterior tarsi being only a very little longer than the second.

Length, 2½ lines.

Hab.—Port Denison, Cape York.

33. LIPARETRUS ALBOHIRTUS, Masters.

L. basalis Macl. (not Blanch.), Trans. Ent. Soc. New South Wales, Vol. I. p. 130.

Black, covered all over with long, erect, flexible hairs of a light ash colour. Head and thorax punctate, opaque and velvety, the clypeus reflexed at the sides and apex, the latter somewhat truncate with rounded angles. The elytra are obsoletely striate-punctate, testaceous-red and velvety, with the basal margin black. The propygidium is very large and of a dull red colour. The legs are piceous, the anterior tibiæ are red, and scarcely bidentate, the terminal tooth being long and straight and the second nearly obsolete; the first joint of the posterior tarsi is about twice the length of the second.

Length, 3½ lines.

Hab.—Port Denison.

I originally described this species under the name of *basalis*, but as that name had been previously used by Blanchard for another species, Mr. Masters, in his catalogue of the Coleoptera of Australia, has very properly substituted for it the present name *albohirtus*.

34. LIPARETRUS SERICEIPENNIS, n. sp.

Smaller than *L. discipennis.* Head and thorax black, opaque, rather velvety, densely punctate, and thickly clothed with long, soft, erect, blackish hairs. Elytra deep red with a sericeous opalescent gloss, and minutely striate-punctate, the base and suture narrowly black-edged. Body beneath black, thinly cinereo-villose, the pygidium minutely but rugosely punctate. The legs are piceous, the anterior tibiæ rather strongly bidentate, the first joint of the posterior tarsi twice the length of the second.

Length, 2½ lines.

Hab.—New South Wales.

35. LIPARETRUS CANESCENS. n. sp.

Somewhat like *L. discipennis.* Ovate, clothed above and beneath with long greyish-white villose hairs. Head and thorax black, opaque, and of a velvety texture, the clypeus glabrous, reflexed, and subtruncate, with rounded angles. Elytra testaceous, subnitid, and punctate, the punctures feebly impressed, with the base and sides bordered rather deeply with velvety-black. The pygidium is minutely and rather rugosely punctate. Legs piceous, the anterior reddish, with only the terminal tooth visible, the first joint of the posterior tarsi is only very slightly longer than the second.

Length, 3 lines.

Hab.—South Australia.

36. LIPARETRUS OCCIDENTALIS, n. sp.

Like *L. discipennis.* Head and thorax black, opaque, minutely punctate, and densely fusco-villose, the clypeus large, truncate and rounded at the angles. Elytra slightly velvety, iridescent, of a pale testaceous-red deeply margined all round with black. Body beneath black, on the sterna densely cinereo-villose, on the abdomen and pygidium very sparingly. Anterior legs red, the tibiæ with the terminal external tooth long and straight, the second a mere inequality of the edge ; the hind tarsi are wanting.

Length, 2½ lines.

Hab.—King George's Sound.

This may be regarded as the Western representative of *L. discipennis.*

37. LIPARETRUS ASSIMILIS, n. sp.

A single specimen of this species is all I have seen. It is in the old Macleayan collection, labelled N. S. Wales, and W. S. Macleay's cabinet name as above. It is very like *L. discipennis*, but smaller, the villose hair on the upper surface more grey, the elytra less velvety and of a pale testaceous hue, and with the base only margined with black and that only narrowly, the other margins narrowly reddish-brown. The body beneath dull dark red and cinereo-villose, the pygidium carinate. Only one visible tooth on the outer extremity of the anterior tibiæ ; the first joint of the posterior tarsi a little longer than the second.

Length, 2 lines.

Hab.—New South Wales.

38. LIPARETRUS HOLOSERICEUS, n. sp.

Entirely black, glabrous above, cinereo-villose beneath. Head and thorax velvety opaque, very minutely punctate. Elytra more nitid, having a satiny gloss, the punctures small, and the geminate striæ distinct. The propygidium and pygidium are nitid, finely punctate, and free from hair. The legs are piceous, the anterior tibiæ tridentate the teeth strong and flat, the terminal one curved outwards. The first joint of the posterior tarsi is scarcely longer than the second.

Length, 2½ lines.

Hab.—Currajong.

I have only one specimen, I think a female, so that it is not unlikely that it may belong to the last sub-section. It certainly seems somewhat out of place here.

39. LIPARETRUS MONTANUS, n. sp.

Oblong-ovate, nigro-villose above, cinereo-villose beneath. Head black, punctate, the clypeus broad, reflexed, truncate, with the angles rounded and a transverse depression in the middle not extending to the sides. Thorax black, opaque, indistinctly punctate. Elytra of a pale lurid testaceous colour, narrowly margined all round with brownish-black, and irregularly punctate, with the geminate striæ lightly marked. Abdomen entirely black, the propygidium very large and finely punctate. Legs piceous-red, the anterior tibiæ lightly bidentate, the first joint of the posterior tarsi much longer than the second.

Length, 2½ lines.

Hab.—Monaro, one specimen (Australian Museum).

40. LIPARETRUS PRUINOSUS, Burm.

Handb. der Ent. IV. p. 195.

Black, sub-opaque, brownish-hairy above, beneath fulvous-hairy, elytra red, margined with black, pruinose, free from hair. Anterior tibiæ tridentate, the upper tooth very small, tarsi reddish.

Length, 3 lines.

Hab.—Tasmania.

I have never seen this insect, but it undoubtedly comes into this place.

b. Body above more or less villose and nitid.

41. LIPARETRUS ERYTHROPTERUS, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 105.

Black, cinereo-villose beneath, partially nigro-villose on the upper surface. Head and thorax finely punctate and thinly clothed with long blackish erect hairs, the clypeus rounded and reflexed, and the median line of the thorax lightly impressed, most distinctly towards the base. The elytra are of a dark brownish-red, without hair, punctate but not profoundly, with a sutural stria and three geminate ones distinctly marked on each elytron. The pygidium is glabrous and very minutely punctate, the propygydium the same, but with a slight median keel. The legs are piceous-red, the anterior tibiæ tridentate, the spur on their inner apex rather long, the tarsi slender, the first joint of the posterior tarsi nearly as long as the second. The palpi are piceous-red and thick. The antennæ are of the same colour, with the club dark-brown.

Length, 5 lines.

Hab.—Inland parts, New South Wales.

42. LIPARETRUS UBIQUITOSUS, n. sp.

Black, broadly ovate. Head densely punctate, thinly cinereo-villose, the clypeus in the male rounded and reflexed as in the female, but more nearly truncate. Thorax coarsely punctate, subnitid, cinereo-villose, the anterior angles prominent and acute. Elytra pale red, nitid, coarsely but not profoundly punctate-striate, each elytron entirely narrowly margined with brownish-red. The under surface is cinereo-villose. The pygidium is large, nitid, piceous, glabrous, and finely punctate. Legs piceous, the anterior tibiæ tridentate, lightly in the male, much flattened out in the female, the spur on the interior apex very long and slight, the first joint of the posterior tarsi a little shorter than the second.

Length, 2½ lines.

Hab.—Every part of New South Wales.

43. LIPARETRUS GLABRIPENNIS, n. sp.

Shortly ovate. Head and thorax black, densely punctate, clothed with long flaxen hair, the clypeus round and reflexed at the apex. Elytra pale testaceous, bordered with black, glabrous, subnitid, faintly punctate and geminate-striate, and nearly covering the penultimate segment of the abdomen. Body beneath black, rather thinly cinereo-villose, the pygidium nitid and finely punctate. Legs piceous, the anterior light red with the tibiæ lightly tridentate, the first and second joints of the posterior tarsi long and about equal.

Length, 2¾ lines.

Hab.—Melbourne,

44. LIPARETRUS LURIDIPENNIS, n. sp.

Like the last species. The head and thorax fulvo-villose, the puncturation fine but more rugose. Elytra paler reddish-yellow, more obsoletely punctate, and more narrowly edged with black. The body is rather densely cinereo-villose beneath, the propygidium exposed and with the pygidium clothed with short gray scales as well as hairs. Legs piceous, anterior tibiæ bidentate, the terminal tooth long and straight, the other scarcely visible, the first joint of the posterior tarsi as long as the second.

Length, 3 lines.

Hab.—King George's Sound.

45. LIPARETRUS RUGOSUS, n. sp.

Of more elongate form than the preceding, and entirely of a subnitid brownish-black, more or less clothed all over with long flaxen hairs. The clypeus is broadly oval and narrowly reflexed; the puncturation of the head and thorax is dense and somewhat vermiculate; that of the elytra is irregular and rather rugose, the three geminate striæ of other species only showing as obsolete ridges. The legs are piceous-red, the anterior tibiæ tridentate, the inner spur short, the first joint of the posterior tarsi shorter than the second.

Length, 3 lines.

Hab.—South Australia.

46. LIPARETRUS COLLARIS, n. sp.

Elongate, oval, black, subopaque. Head finely punctate, clypeus large, broadly reflexed, rounded at the angles, slightly emarginate in the middle, and covered with long erect blackish hairs. Thorax minutely punctate, the median line distinct near the base, and the lateral margins and apex densely frilled with very long blackish hairs. The elytra are brownish-black, subnitid, glabrous, and punctate, with the geminate striæ broad and distinct. Body beneath black and densely cinereo-villose, the propygidium very large, glabrous, and opaque. Legs piceous, anterior tibiæ tridentate, anterior tarsi thick, the first and second joints of the posterior tarsi about equal.

Length, 4½ lines.

Hab.—South Australia.

47. LIPARETRUS CONCOLOR, Erichs.

Archiv für Naturg. VIII. 1, p. 169.

Very like *L. collaris*, but a shorter insect, and less densely frilled on the thorax. Entirely of a dull black. Head minutely punctate with a broad very shallow longitudinal depression in the middle, the clypeus narrowly reflexed at the sides and apex, the angles broadly rounded, and the middle very slightly emarginate. Thorax black, minutely punctate, frilled with long black hair, and the median line shallow and well marked. Elytra rather shallowly rugose-punctate, with the geminate striæ lightly marked. Body beneath densely cinereo-villose, almost tomentose, the pygidium thinly villose and minutely rugose, punctate. Legs piceous, the anterior tibiæ tridentate, the first joint of the posterior tarsi shorter than the second.

Length, 3 lines.

Hab.—Tasmania, and New South Wales.

48. LIPARETRUS CRINIGER, n. sp.

Ovate, black, subnitid, densely cinereo-villose above and beneath, the hair on the upper surface darker than that beneath. Head and thorax minutely punctate, the clypeus broadly reflexed and rounded. Elytra dark red, becoming darker towards the base and sides, and finely and rather rugosely punctate, without, or with scarcely a trace of, the geminate striæ. The propygidium is large, exposed, finely punctate and densely villose. Legs piceous, the anterior tibiæ tridentate, the first joint of the posterior tarsi much longer than the second.

Length, 3 lines.

Hab.—South Australia.

49. LIPARETRUS SALEBROSUS, n. sp.

Of a somewhat nitid-black all over excepting the legs which are piceous. The head and thorax are nigro-villose, the former densely punctate with the clypeus truncate and reflexed at the apex with obtuse angles, in the male the apex is slightly emarginate, the latter coarsely variolose-punctate with a depressed median line. Elytra thinly villose, strongly and irregularly striate-punctate. Under surface cinereo-villose, pygidium and propygidium rugosely punctate and granulate, and somewhat carinate in the middle. The anterior tibiæ are bidentate, the spur on the inner apex long.

Length, 2 lines.

Hab.—Victoria, South Australia, and New South Wales.

50. LIPARETRUS CONVEXIUSCULUS, Macl.

Proc. Linn. Soc. New South Wales, Vol. VIII. p. 416.

Hab.—Queensland.

I do not reprint the description of this species as it has already appeared in the publications of this Society.

51. LIPARETRUS RUBICUNDUS, Macl.

Trans. Ent. Soc. New South Wales, I. p. 129.

Entirely a nitid-red except the head which is black. The clypeus is rounded and reflexed in front, and the clypeal suture is straight and bi-impressed. Both head and thorax finely punctate, and clothed with nearly fulvous erect hairs. The elytra are glabrous and punctate, the geminate striæ rather feeble, the base with the base of the thorax very narrowly margined with black. The propygidium, which is large, is less thickly villose than the rest of the body and is finely and thinly punctate. Anterior tibiæ tridentate, the first joint of the posterior tarsi shorter than the second.

Length, 3 lines.

Hab.—Port Denison.

52. LIPARETRUS PROPINQUUS, n. sp.

Like the preceding in form. Head and thorax black, nitid, rather coarsely punctate, and clothed with dark-brown or black villous hair. Elytra piceous-red, more finely punctate than *L. rubicundus.* Body beneath black, cinereo-villose, the hair thin on the propygidium and pygidium which are punctate and slightly piceous. Legs piceous-red, anterior tibiæ broadly tridentate, the first joint of the posterior tarsi shorter than the second.

Length, 2½ lines.

Hab.—Port Denison.

53. LIPARETRUS LÆVIS, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 104.

Ovate, black, above nearly glabrous, beneath slightly cinereo-villose; head somewhat rugosely punctate, with three minute tubercles on the forehead. Thorax black, subopaque, very minutely punctate, the median line lightly marked, and the apex and sides frilled with brownish hairs. Elytra testaceous, slightly sericeous, minutely punctate and faintly striate, the suture slightly brownish. Body and pygidium piceous-red, the propygidium nearly glabrous, and minutely transversely punctate. Legs piceous-red, the anterior tibiæ lightly tridentate, the first joint of the posterior tarsi slightly longer than the second.

Length, 3 lines.

Hab.—King George's Sound (Aust. Mus.).

54. LIPARETRUS EBENINUS, n. sp.

Like *L. salebrosus.* Entirely nitid-black. Head densely punctate or granulate, the clypeus reflexed, broadly rounded at the angles and very slightly emarginate in front. Thorax strongly punctate, with dark hairs on the anterior portion and sides. Elytra short, convex, sharply punctate, one stria near the suture more distinct than the others. The body beneath is cinereo-villose, the hair less thick on the propygidium and pygidium which are finely punctate. The anterior tibiæ are lightly tridentate, the first joint of the posterior tarsi a little longer than the second.

Length, 2½ lines.

Hab.—King George's Sound.

c. Upper surface entirely glabrous.

55. LIPARETRUS RUBEFACTUS, n. sp.

Entirely glabrous above, moderately cinereo-villose beneath. Head black, densely and minutely punctate, the clypeus large and rounded, the suture almost straight, in the male subtruncate at the apex. Thorax black, subnitid, rather thinly punctate, median line marked. Elytra red, nitid, rather regularly punctate, with the three geminate striæ distinct. Body beneath black, abdomen red, the pygidium glabrous and carinate in the middle. Legs piceous-red, anterior tibiæ subtridentate.

Length, 2 lines.

Hab.—West Australia.

56. LIPARETRUS ATRICEPS, Macl.

Trans. Ent. Soc. New South Wales, Vol. I. p. 128.

Head black, densely punctate, the clypeus broadly rounded and margined. Thorax piceous-red sometimes almost black, nitid, and finely punctate, with the median line distinct and the lateral margins fringed with long hair. Elytra pale red, nitid, and finely punctate, with three geminate striæ distinctly visible on each. The whole under surface is piceous-red, clothed with ashen hair, the pygidium is pale red, nitid, minutely punctate and glabrous except at the apex where there are some long flaxen hairs. The legs are red, the anterior tibiæ of the males almost obsoletely tridentate, the first joint of the posterior tarsi almost as long as the second.

Length, 3½ lines.

Hab.—Port Denison, Gayndah, &c.

57. LIPARETRUS RUFIPENNIS, Macl.

Trans. Ent. Soc. New South Wales, Vol. I. p. 128.

Head black, very finely and densely punctate, without pubescence, clypeus short, broad, rounded, and reflexed, a slight median impressed line on the forehead. Thorax black, finely punctate, slightly impressed on the median line and without hair. Elytra red, a little nitid, rather shallowly punctate, with three geminate striæ on each elytron. Pygidium of a dull red or piceous hue, and glabrous. Under surface of thorax cinereo-villose, of the abdomen thinly pubescent. Legs piceous-red, the anterior tibiæ strongly tridentate, the spur on the inner apex strong and acute, the first joint of the posterior tarsi equal in length to the second.

Length, 4 lines.

Hab.—Port Denison.

58. LIPARETRUS OVATUS, n. sp.

Shortly ovate, black, above nearly glabrous, nitid, beneath with cinereous hairs. Head finely punctate, the clypeus reflexed and rounded. Antennæ black. Thorax very densely punctate; the median line impressed, the sides ciliated. Elytra pale testaceous, very smooth, punctate, with three geminate striæ, the suture and the outer margins narrowly edged with brown. Legs and abdomen black, anterior tibiæ tridentate, tarsi rather thick, first joint of posterior tarsi much shorter than second, the ungues of all the tarsi large and divergent. Pygidium densely punctate, clothed with very short decumbent pile.

Length, 3¼ lines.

Hab.—Western Australia.

59. LIPARETRUS SERICEUS, Macl.

Trans. Ent. Soc. New South Wales, II. p. 189.

Head and thorax black, pruinose, very finely punctate. Elytra dark red, with the base and lateral margins black, broadly rounded or almost obliquely truncate at the apex and irregularly punctate, with four rather well-defined geminate punctate striæ on each elytron. Pygidium black and finely punctate. Body beneath black and moderately cinereo-villose. Legs piceous, the anterior tibiæ lightly tridentate, the first joint of the posterior tarsi nearly equal in length to the second.

Length, 3¾ lines.

Hab. – Gayndah.

60. LIPARETRUS MICANS, n. sp.

Ovate, black, nitid, above glabrous, beneath thinly cinereo-villose. Head minutely punctate, the clypeus thinly punctate and truncate, with obtuse angles. Thorax minutely punctate, the median line distinct on the posterior half. Elytra reddish testaceous, bordered at the base, sides, apex and suture with black, rather minutely punctate with three geminate striæ. The pygidium is glabrous and punctate, the propygidium is half-covered by the elytra. Legs piceous, the anterior tibiæ very strongly tridentate, the first and second joints of the posterior tarsi about equal.

Length, 3 lines.

Hab.—Endeavour River.

61. LIPARETRUS PARVULUS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II. p. 192.

This species only differs from *L. lævatus* (*glaber* mihi) in being smaller, in having the pygidium and under side of the body black, and in having a narrow lateral black margin on the elytra. Both species have the same peculiarly formed fore tibiæ, more like those of a *Diphucephala* than of a *Liparetrus*.

Length, 1¾ lines.

Hab.—Gayndah.

62. LIPARETRUS PALLIDUS, Macl.

Trans. Ent. Soc. New South Wales, Vol. II. p. 190.

Entirely of a pale red, excepting the forehead, which is generally darker or even black, nitid, punctate and glabrous above. The clypeus is broad, short, rounded at the angles and nearly truncate.

The thorax has the median line lightly marked. Elytra finely punctate and rounded at the apex with the geminate striæ tolerably distinct. Propygidium and pygidium minutely punctate, and clothed with very short hair. Under side of body thinly clothed with reddish hair. Anterior tibiæ bidentate.

Length, 2¾ lines.

Hab.—Gayndah.

63. LIPARETRUS LÆVATUS, Macl.

L. glaber, Macl. Trans. Ent. Soc. New South Wales, II. p. 191.

The specific name *glaber* having been used by Burmeister, I substitute that of *lævatus* for this insect.

Head and thorax black, subnitid, punctate, and free from hair, the former with the clypeus reflexed and somewhat rounded in front. Elytra reddish-yellow, nitid, free from hair and irregularly punctate, with the geminate striæ traceable. Abdomen reddish-yellow, finely punctate and very sparingly pilose. Pygidium large. Legs piceous, the external apex of the anterior tibiæ prolonged to half the length of the tarsi, and without teeth on the outer margin.

Length. 2¼ lines.

Hab.—Gayndah.

64. LIPARETRUS IMPRESSICOLLIS, n. sp.

Ovate, black, nitid, glabrous above, very sparingly cinereo-villose beneath. Head minutely punctate on the perpendicular front, smooth on the occiput, the clypeal suture almost straight, the clypeus short, broad, rounded and very slightly emarginate. Thorax finely punctate, deeply marked on the median line, and with a deep transverse impression on each side about the middle, but not reaching either the median line or the sides. Elytra short, ferruginous-red, and finely but distinctly punctate, with three geminate striæ, the base and suture are narrowly edged with black, or dark brown. The propygidium and pygidium are glabrous and very finely rugose-punctate. Legs piceous-red, the anterior tibiæ tridentate, the first joint of the posterior tarsi longer than the second.

Length, 2¼ lines.

Hab.—New South Wales.

65. LIPARETRUS NIGRICEPS, n. sp.

Broadly ovate, glabrous above, cinereo-villose beneath. Head black, sharply and finely punctate, and longitudinally impressed in the middle in front, the clypeus large, reflexed and rounded on the angles, and a minute keel in the middle of the base. Thorax of a dull dark red, very minutely punctate. Elytra of a paler red and with a slight iridescence, minutely punctate, with the geminate striæ very faint. The body beneath is blackish, the propygidium and pygidium of a dull dark red, with a few setiform scales. The legs are piceous-red, the anterior tibiæ tridentate, the first joint of the posterior tarsi slightly longer than the second.

Length, 3½ lines.

Hab.—King George's Sound. One specimen (Aust. Mus.)

66. LIPARETRUS OPACICOLLIS, n. sp.

Oblong-oval, glabrous above, cinereo-villose beneath. Head black, densely and minutely punctate, with two very small rounded tuberosities in front at the clypeal suture, the suture itself is but slightly sinuate and the clypeus is broad, reflexed, rounded at the angles and coarsely punctate. The thorax is very minutely and densely punctate and of an opaque black. Elytra testaceous, subnitid, slightly iridescent, and minutely punctate, with the three geminate striæ rather faintly marked, and the base, suture and sides faintly margined with brown. Abdomen black, the segments with decumbent hair on the apex, the pygidium and propygidium black, large and thinly clothed with short whitish setiform scales. Legs piceous-red, anterior tibiæ tridentate, anterior tarsi thick, the joints clavate, the first joint of the posterior tarsi much longer than the second.

Length, 4 lines.

Hab.—King George's Sound.

Described from specimens in the Australian Museum.

67. LIPARETRUS ROTUNDIPENNIS, n. sp.

Shortly ovate, convex, black, sub-opaque, sub-iridescent, glabrous above, cinereo-villose beneath. Head very minutely punctate, with two very minute tubercles on the forehead, the clypeus broadly rounded and reflexed. Thorax opaque, very transverse. Elytra piceous and sub-opaque, the puncturation and geminate striæ faint. Propygidium and pygidium large, very minutely punctate and very thinly villose. Legs piceous, anterior tibiæ bidentate, the first joint of the posterior tarsi longer than the second.

Length, 2 lines.

Hab.—South Australia.

68. LIPARETRUS CONVEXIOR, n. sp.

Except in its greater size, this species is in most respects almost identical with the last. The thorax is less opaque and more punctate, the elytra are more obsoletely punctate, the body and pygidium have a piceous hue, the anterior tibiæ are tridentate, and the first joint of the posterior tarsi is twice the length of the second.

Length, 2½ lines.

Hab.—South Australia.

69. LIPARETRUS PICIPENNIS, Germ.

Linn. Ent. III. p. 194.

Broadly ovate, flattish, black, sub-opaque, glabrous above, cinereo-villose beneath. Head minutely punctate, impressed in the middle at the clypeal suture, the clypeus broadly margined and rounded. Thorax sub-sericeous, minutely punctate, the median line distinct, and a frill of hairs on the lateral margins. Elytra piceous, broad, becoming rather broader at the apex, completely covering the penultimate segment of the abdomen, and punctate, with three geminate striæ. Body beneath and pygidium piceous-black, punctate and thinly villose. Anterior tibiæ tridentate, the first joint of the posterior tarsi shorter than the second.

Length, 3 lines.

Hab.—South Australia, and King George's Sound.

This species forms the type of a distinct and perhaps a numerous group, easily recognizable by the less convex penultimate segment of the abdomen entirely covered by the elytra which are dilated at the apex. Burmeister makes this peculiarity the basis of one of his two subdivisions, but he has made the mistake of taking the *L. concolor* of Erichson, as identical with this species. The four following species belong to this group :—

70. LIPARETRUS OBSCURUS, n. sp.

Broadly ovate, black, opaque, elytra dark reddish-brown, glabrous above, cinereo-villose beneath. Head minutely punctate, the clypeus more coarsely, with the apex broadly rounded and reflexed. Thorax less densely punctate than the head, the median line distinctly marked. Elytra with the geminate striæ distinct, the intermediate spaces lightly punctate. Pygidium rather rugose, carinated in the middle, the propygidium covered, or nearly so by the elytra. The anterior tibiæ bluntly tridentate.

Length, 2¼ lines.

Hab.—South Australia.

71. LIPARETRUS NITIDIOR, n. sp.

In form like *L. obscurus*, but with the elytra of a nitid, slightly iridescent, red colour, and with a more distinct puncturation. The clypeus of the male is narrowed, truncate and reflexed at the apex, the angles obtuse, and the sides widening behind. The thorax is opaque, very minutely punctate and rather thinly clothed on the margins with long erect blackish villose hairs. Elytra red, nitid, thinly but distinctly punctate and geminate-striate, at the base and suture narrowly margined with black. Body beneath and pygidium cinereo-villose. Legs piceous, anterior tibiæ tridentate.

Length, 2¼ lines.

Hab.—South Australia.

72. LIPARETRUS LATIUSCULUS, n. sp.

Differs from *L. picipennis* in being smaller, more nitid, more minutely punctate, with the thorax less thickly fringed beneath with hairs, and the median line not traceable. The anterior tibiæ are tridentate, and the first joint of the posterior tarsi is a little shorter than the second.

Length, 2½ lines.

Hab.—Wide Bay One specimen (Aust. Mus.)

73. LIPARETRUS GLOBULUS, n. sp.

Shortly ovate, entirely piceous-red, nitid, glabrous. Head minutely punctate, clypeus broad, reflexed, and truncate, with rounded angles. Thorax finely punctate, a few marginal hairs on the sides, the median line deeply impressed. Elytra broad, short, in the female covering the propygidium, finely punctate, the geminate striæ tolerably distinct. The body beneath is almost glabrous, the pygidium finely punctate, the anterior tibiæ are tridentate in the males, the third tooth shows in the female, but is nearly obsolete.

Length, 1½ lines.

Hab.—Guntawang.

This is scarcely one of the *picipennis* group.

d. Body squamose.

74. LIPARETRUS VESTITUS, Blanch.

Cat. Coll. Ent. Mus. Paris, p. 105; Voy. Pole Sud, IV. p. 126, pl. 8, fig. 14.

Ovate, black, above nigro-villose, beneath cinereo-villose. Head rugosely punctate, the clypeus reflexed and scarcely differing in the sexes. Antennæ testaceous. Thorax short, broad, and rugosely punctate. Elytra glabrous, pale ferruginous, nitid, faintly punctate, with three geminate striæ, the base black, and the suture and sides margined with black. Pygidium scaly and hairy. Legs black, tarsi ferruginous, anterior tibiæ tridentate, the first joint of posterior tarsi a little longer than the second.

Length, 4 lines.

Hab.—Tasmania, and South Australia.

75. LIPARETRUS NUDIPENNIS, Germ.

Linn. Ent. III. p. 194.

Broadly ovate, black, opaque. Head minutely rugose-punctate, the clypeus short, broad, reflexed, and rounded. The thorax densely covered with small greyish scales, and with villose hairs on the sides and apex. Elytra glabrous, short, broad, irregularly striate-punctate, and with three geminate striæ. Body beneath cinereo-villose, the segments of the abdomen with whitish pubescence, and the propygidium and pygidium densely cinereo-squamose. Legs piceous, the anterior tibiæ strongly bidentate, the first joint of the posterior tarsi longer than the second.

Length, 2¾ lines.

Hab.—South Australia.

76. LIPARETRUS SQUAMIGER, n. sp.

Of rather more elongate form than the last species. Head black, minutely granulate, the clypeus in the male with the angles obliquely truncate. Thorax black and very densely covered with brownish-grey scales. Elytra dark red, blackish at the base, nitid, short, rounded and finely ciliated towards the apex and finely punctate, with three geminate striæ. Abdomen and pygidium covered with minute scales and a thin pubescence. Legs piceous, the anterior tibiæ lightly tridentate, the first joint of the posterior tarsi much longer than the second.

Length, 2 lines.

Hab.—South Australia.

77. LIPARETRUS SUBSQUAMOSUS, n. sp.

Black, with the elytra and legs piceous. Head and thorax finely punctate, the clypeus broadly rounded and reflexed at the apex. Elytra subnitid, the puncturation and geminate striæ distinct. The propygidium quite exposed, that and the pygidium densely covered with minute greyish scales. Legs reddish-piceous, the anterior tibiæ tridentate, the spur on the inner apex long, slender, and slightly curved.

Length, 2 lines.

Hab.—Port Darwin.

78. LIPARETRUS ROTUNDIFORMIS, n. sp.

Ovate, black, nitid, and glabrous above excepting a frill of hair on the apex and sides of the thorax. Head and thorax finely granulose, the clypeus large and rounded, the median line of the thorax well marked. Elytra distinctly punctate, with three geminate striæ. Body beneath rather thinly villose, pygidium and propygidium covered with minute whitish scales. Legs piceous, the anterior tibiæ tridentate but not strongly, the first and second joints of the posterior tarsi about equal.

Length, 1¾ lines.

Hab.—King George's Sound.

SUB-SECTION IV.

Clypeus emarginate.

79. LIPARETRUS ABNORMALIS, n. sp.

Glabrous above, cinereo-villose beneath. Head black, densely and minutely punctate, the clypeus triangularly emarginate, the angles rounded. Thorax black, very minutely and rather thinly punctate, obtusely angled and a little impressed in the middle of the base. Elytra ferruginous-red, nitid, and lightly punctate, with three geminate striæ with similar punctures. Under surface black or piceous, the segments of the abdomen clothed with decumbent whitish hair, the pygidium and penultimate segment large, exposed, glabrous, and of a dull red. Legs piceous-red, anterior tibiæ tridentate but not strongly, interior spur moderate, the first and second joints of the posterior tarsi equal.

The form of the clypeus is the peculiar feature of the species.

Length, 3 lines.

Hab.— South Australia.

80. LIPARETRUS SIMILLIMUS, n. sp.

This somewhat resembles the last-mentioned species in the emarginate clypeus, but the emargination is rather deeper, more rounded in the middle and the angles more pointed. The colour is entirely of a pale subnitid glabrous chesnut, the thorax most minutely punctate, transverse and rounded behind. Elytra minutely punctate, the three geminate striæ rather indistinct. Pygidium large, minutely punctate, glabrous and carinate in the middle. Anterior tibiæ very largely tridentate, the two first joints of the posterior tarsi equal.

Length, 3 lines.

Hab.—Interior South Australia.

Three specimens of this very peculiar species are all I have seen, and these are in a very imperfect condition.

81. LIPARETRUS KENNEDYI, n. sp.

Ovate, cinereo-villose, the hairs thinner and shorter above than beneath. Head black, minutely punctate, deeply sunk in the thorax, the clypeus emarginate in crescent shape with the angles obtuse. Thorax black, subnitid, slightly impressed on the median line behind the middle, and punctate, the punctures of different sizes. Elytra red, nitid, and punctate, the punctures large and rather thinly distributed except those of the geminate striæ. Abdomen black and finely punctate. Legs piceous-red, the anterior tibiæ strongly tridentate, the first joint of the posterior tarsi a little shorter than the second.

Length, 5 lines.

Hab.—Cooper's Creek.

The only specimen of this insect I have seen is in the collection of the Australian Museum labelled "Kennedy's Expedition," and no doubt was got by that distinguished Australian Explorer on his Expedition to the Victoria River or Cooper's Creek in the year 1846.

SECTION II.

ANTENNÆ 8-JOINTED.

The insects of this section are, as a rule, readily recognisable. They are small, generally of a more elongate form, and flatter on the elytra than those of Section I, are for the most part clothed with a dense pubescence, and are altogether of so distinct a character as to justify placing them in another genus. There are, however, a few species utterly unlike the rest in these respects, and apparently inseparable from some groups of those with 9-jointed antennæ. There is also considerable variety observable in the form of the clypeus, but as the total number of species in the section is small, it is scarcely worth while making subsections founded on these variations as in Section I.

82. LIPARETRUS MONTICOLA, Fabr.

Syst. Entom. p. 39, and Syst. El. t. II. p. 184; Oliv. Entom. t. I. g. 5, p. 77, pl. 6, fig. 57, a, b; Gmelin, Syst. Nat. p. 1867; Herbst, Coleopt. t. III. p. 137; Boisd. Voy. de l'Astrob. t. II. p. 196.

Convex and ovate, entirely reddish testaceous except the head and apex of the thorax, which are black, and a narrow margin to the elytra reddish-brown, upper surface glabrous and very nitid. Head minutely and densely punctate, the clypeus rounded, reflexed and nearly truncate at the apex. Thorax as finely but much more thinly punctate than the head. Elytra finely and rather regularly punctate, the punctures larger than those on the thorax, with the three geminate striæ distinct. Under surface of body cinereo-villose, the hairs becoming more decumbent on the abdominal segments, the propygidium and pygidium glabrous and minutely punctate, the former half-covered by the elytra, the latter large, vertical, and fringed at the apex with long hair. Anterior tibiæ very strongly tridentate, the first joint of the posterior tarsi equal in length to the second.

Length, 2½ lines.

Hab.—Endeavour River.

My specimens, from which the above description was taken, are from Cooktown. I have no doubt the species was first taken in Captain Cook's Voyage along the Australian Coast in the year 1785.

83. LIPARETRUS FERRUGINEUS, Blanch.

Cat. Col. Mus. Paris, p. 105.

Shortly ovate, nitid, beneath cinereo-villose. Head black, villose and minutely punctate, the clypeus in the male produced into a slightly emarginate, acute-angled lamina, in the female broadly rounded and reflexed. Thorax black, sharply punctate, and glabrous except on the lateral margins, with the median line marked throughout. Elytra reddish-brown, glabrous, and strongly and irregularly striate-punctate. Body beneath black, the two last segments large, red, glabrous and punctate. The four anterior legs piceous-red, the anterior tibiæ tridentate.

Length, 3 lines.

Hab.—New South Wales.

84. LIPARETRUS ERYTHROPYGUS, Blanch.

Cat. Col. Mus. Paris, p. 105.

Smaller than *L. ferrugineus*, but of the same form. Entirely black excepting the two last segments of the abdomen and the anterior legs which are piceous, glabrous and nitid above and cinereo-villose beneath. The clypeus of the male is less prominently laminated than in *L. ferrugineus*, the thorax has no median line, and the elytra are rather more rugosely striate-punctate. The anterior tibiæ are strongly tridentate.

Length, 2½ lines.

Hab.—Queensland.

85. LIPARETRUS BASALIS, Blanch.

Cat. Col. Mus. Paris, p. 105.

Ovate, black, above nigro-pilose, beneath cinereo-villose. Head rugosely punctate, the clypeus reflexed and three-sided. Thorax rugosely punctate, pilose, the median line impressed. Elytra brownish-red, the base blackish, rugosely punctate in irregular striæ. Pygidium rugosely punctate and villose. Anterior tibiæ bidentate.

Length, 3 lines.

Hab.—Tasmania.

This species has two characters which are to be found in most of the following species and which is never found in any of the 9-jointed antennæ group; (1) the form of the clypeus presenting three more or less truncate faces, and (2) the anterior tibiæ having two approximate teeth on the outer apex, and with generally another near the base.

86. LIPARETRUS DEPRESSUS, Blanch.

Cat. Col. Mus. Paris, p. 105.

Black, depressed, entirely clothed with reddish hair. Head black, densely clothed with red hair, the clypeus as in *L. basalis*, but with the oblique sides of the apex a little emarginate. Thorax black, densely hirsute. Elytra brownish-red, nitid, covered with a short pile, and rugosely punctate, with two slightly elevated lines. Body beneath and pygidium black and fulvo-villose. Legs piceous, the anterior tibiæ strongly tridentate, the teeth occupying the whole length of the joint, the first joint of the posterior tarsi less than half the length of the second.

Length, 3 lines.

Hab.—New South Wales.

87. LIPARETRUS POVERUS, Blanch.

Cat. Col. Mus. Paris, p. 105.

Like the last species, but a little longer and entirely black. The fulvous hair on the head and thorax is less dense and that on the elytra is longer. The anterior tibiæ are bidentate externally at the apex; the first joint of the posterior tarsi very much shorter than the second.

Length, 3¼ lines.

Hab.—New South Wales.

88. LIPARETRUS VALGOIDES, Blanch.

Cat. Col. Mus. Paris, p. 105.

Flat, black, with elytra and abdomen reddish, entirely cinereo-pilose. Head densely hairy, the clypeus as in the preceding. Thorax rugosely punctate, rather densely hairy, scutellum white. Elytra red, strongly punctate, clothed with a short, rigid pale pile. Legs red, anterior tibiæ bidentate. Abdomen red, clothed with white setiform scales.

Length, 2 lines.

Hab.—New South Wales.

89. LIPARETRUS UNICOLOR, Masters.

L. concolor, Macl., Trans. Ent. Soc. New South Wales, Vol. I. p. 129.

Elongate oval, entirely of a reddish-chesnut colour, excepting the head which is of a darker hue, and clothed more or less thickly all over with short decumbent cinereous pubescence. The elytra are very short and rugosely punctate, the propygidium very large, the anterior tibiæ tridentate, the posterior tarsi with the second joint very long.

Length, 2¼ lines.

Hab.—Queensland.

90. LIPARETRUS HUMILIS, Blanch.

Cat. Col. Mus. Paris, p. 103.

Like *L. valgoides*, but of narrower form and entirely black or piceous. Head rugose, scarcely pilose, the clypeus slightly reflexed. Thorax punctate, thinly cinereo-pubescent, scutellum white. Elytra short, slightly attenuated behind, rugosely punctate and thinly cinereo-pubescent. Body and pygidium rather densely cinereo-pubescent. Legs piceous, anterior tibiæ bidentate.

Length, 2½ lines.

Hab.—New South Wales.

This I believe to be the *Macrothops Lottinii*, Dupont.

91. LIPARETRUS PYGMÆUS, Burm.

Handb. der Ent. IV. p. 199.

Ovate, flat, black, nitid, strongly and sharply punctate, and clothed rather thinly with short stiff hairs. The clypeus is nearly as long as broad, rounded in front, and very slightly reflexed at the apex. The thorax is nearly as long as broad, and without median impression. Elytra irregularly striate-punctate. Body beneath thinly villose, the abdomen with a reddish tinge and sharply punctate. Legs piceous-black, the anterior tibiæ externally bidentate at the apex and with a tooth-like notch near the base.

Length, 1½ lines.

Hab.—K. G. Sound.

92. LIPARETRUS COOKII, n. sp.

Oblong-ovate, piceous, subnitid, entirely covered with semi-erect pale fulvous hairs above and cinereous hairs on the abdomen. Head punctate, clypeus short, the angles truncately rounded. Thorax punctate, not much broader than the length. Elytra dark chesnut, densely and rugosely punctate with a few indistinctly raised striæ, the hair as dense but shorter than on the thorax Propygidium and pygidium densely hairy, and punctate. Legs red; the anterior tibiæ strongly bidentate, with a tooth-like notch above the middle.

Length, 2 lines.

Hab.—Endeavour River.

93. LIPARETRUS HISPIDUS, n. sp.

Like *L. poverus*, ovate, piceous, subnitid, rugosely punctate, very densely clothed above with long erect reddish hair. Clypeus broad, reflexed in front and subtruncate at the angles. Thorax and scutellum very densely covered with red hair. Elytra very rugosely punctate and finely granulose, all disposed in many very slightly marked striæ. The under surface of the body less densely villose than the upper, the hair on the propygidium very long. Anterior tibiæ bidentate, a tooth-like notch near the base.

Length, 3 lines.

Hab.—New South Wales.

94. LIPARETRUS BURMEISTERI, n. sp.

Oblong, ovate, black, nitid, nigro-villose above, cinereo-villose beneath. Head thinly punctate, pointed in front of the eyes, the clypeus in the male rectangular in front and obliquely subemarginate on each side. Thorax as long as broad, finely punctate. Elytra dark red, and coarsely and rugosely punctate, with one or two slightly raised lines. Pygidium and propygidium rugosely punctate and rather densely villose. Legs piceous, the anterior tibiæ bidentate, with a tooth-like notch near the base.

Length, 2¾ lines.

Hab.—Illawarra.

95. LIPARETRUS ORDINATUS, n. sp.

Oblong-oval, piceous, nitid. Head covered with decumbent reddish hairs, the clypeus broad, reflexed, truncate, emarginate behind the angles. Thorax black and densely covered with decumbent reddish hair all converging towards the scutellum. Elytra red, densely and irregularly striate and punctate, with some of the interstices a little elevated, and clothed thinly with short whitish decumbent hair. Propygidium exposed, that and the pygidium and abdomen generally densely clothed with yellowish decumbent hair. Anterior tibiæ very broad and bidentate, a third tooth near the base.

Length, 3 lines.

Hab.—Interior South Australia.

96. LIPARETRUS MÆCHIDIOIDES, n. sp.

Ovate, rather depressed, black, nitid, sharply punctate with a decumbent setiform scale in each puncture. Clypeus broadly rounded and reflexed in front, obliquely truncate on the sides. Thorax rather coarsely punctate and without median line, the anterior angles pointed. Elytra black (in female piceous), striate in double rows of white decumbent setiform scales with the interstices slightly costiform, and covering the penultinate segment of the abdomen. Anterior tibiæ bidentate.

Length, 1½ lines.

Hab.—Piper's Flats, Blue Mountains.

97. LIPARETRUS STRIATIPENNIS, n. sp.

Ovate, black, subnitid, punctate, villose. Head thinly and strongly punctate, the clypeus broad, nearly truncate and reflexed at the apex, the oblique sides a little emarginate. Thorax coarsely but not densely punctate, fusco-villose. Elytra villose, piceous, striate with two rows of minute punctures in each, and with elevated lines between them. The abdominal segments covered above with silvery scales, beneath and the pygidium with part of the propygidium moderately cinereo-villose. Legs piceous, the anterior tibiæ bidentate,

Length, 3 lines.

Hab.—Piper's Flats.

This completes the species of *Liparetrus* in the Australian Museum and in my own, with the exception of a few doubtful and unpaired specimens.

The following species previously described I have been unable to identify :— *L. hirsutus*, Burm. ; *L. curtulus*, Burm. ; *L. glabratus*, Burm. ; *L. glaber*, Burm. ; *L. uniformis*, Blanch. ; *L. striatus*, Blanch. ; and *L. nigricollis*, Hope. The first of these, *L. hirsutus*, I cannot place at all. The description would answer for any of the first sub-section, but it is also described as having 8-jointed antennæ, which seems impossible in that group. *L. curtulus* is also said to have 8-jointed antennæ, and very short, glabrous elytra; this may be *L. ferrugineus*, Blanch. ; *L. glabratus*, and *glaber*, Burm., I cannot identify ; they are Swan River insects. *L. uniformis*, Blanch, is not sufficiently described ; it may be my *L. luridipennis*. *L. striatus* from Western Australia I cannot recognize, and Mr. Hope's species *L. nigricollis* from Port Essington I have never seen, and the description does not even enable me to place it in any of my sub-sections.

NOTES AND EXHIBITS.

Mr. Douglas-Ogilby exhibited the tongue of a specimen of *Lates calcarifer* shewing that it is partially covered with patches of granulose teeth, as previously pointed out by Dr. Bleeker and the Hon. W. Macleay, but denied by European Naturalists; the lingual teeth are similar in form and composition to those of the other tooth-bearing bones, and the term villiform cannot be applied to them.

Mr. Macleay exhibited from his own collection eighty-five species of the insects described in his paper on the genus *Liparetrus*.

Dr. Ramsay exhibited photographs of the skeleton of *Megaceros Hibernicus*, the Irish Elk, taken from a very fine specimen recently received by the Australian Museum; Tasmanian stone axes—all pebbles rudely chipped and without definite shape; and a double-headed axe from the Admiralty Islands.

Mr. Brazier exhibited a large series of shells of the genus *Triton* comprising examples of the following species; *Triton Tritonis*, Linn., from the Solomon Islands; *T. nodiferus*, Lam., from Marseilles, France; and the variety *T. australis* from Berry's Bay, and Bottle and Glass Rocks, Port Jackson, and from Port Stephens. The type from the Mediterranean is a thick and heavy shell, whereas the Australian variety is much thinner. The latter extends also to Japan.

Mr. Masters exhibited a living specimen of *Phyllurus inermis*, the "rock scorpion" of quarrymen—caught at Elizabeth Bay, a lizard which is now becoming scarce about Sydney; and a specimen of each sex of a N. American butterfly—*Papilio androgeus*—together with a third specimen shewing the characteristic form and colour of both sexes one on the right, the other on the left half of the insect.

Dr. O. Katz exhibited pure test-tube cultivations of Bacteria in sterilised nutrient gelatine, undoubtedly the most satisfactory cultivating medium. The bacteria were obtained principally from tap-water of the Sydney water supply, and from samples of ensilage, which was brought by Mr. Stanley from Coonong, and which might possibly have some connection with the reported horse-disease. He also exhibited and explained diagrams showing the cultivation of the micro-organisms in nutritive gelatine on glass-plates, a method which enables one to distinguish between the different bacteria as they propagate and form colonies, and to make pure cultures. He announced his hope of carrying out a series of examinations of water from the Sydney Water Supply, in order to be able to give an opinion on its sanitary condition.

Mr. Whitelegge exhibited an extraordinarily rich gathering of microscopic forms—Rotifers, Entomostraca, Desmids, Diatoms and others—from a small pond in Moore Park.

Dr. Cox exhibited a conical cap, about 35 inches long and 12 inches wide at the mouth, made by the natives of certain of the Fiji Islands, from cobwebs. It has been supposed that such caps were the productions of a large spider, but Mrs. Moreton, who gave the example exhibited to Dr. Cox, assures him that the natives make them by winding many cobwebs round a conical framework of twigs. They are known to Europeans as "Smothering or Execution Caps," but it would appear that they are used only for the purpose of infanticide, especially for smothering deformed or objectionable children at birth, and not for the execution of adults.

Mr. C.S. Wilkinson exhibited a very large specimen of *Aphanaia gigantea*, and a piece of sandstone with numerous minute markings believed to be those of ostracoid shells, both obtained by Mr. David, F.G.S., from the marine beds of the Lower Coal Measures, near Patterson; also a specimen of a remarkable species of *Planorbis* embedded in ferruginous sandstone from a depth of 25 feet from the surface at Cockatoo Island. This specimen was sent by Mr. J. H. Maiden, and it is of much interest, being the first fossil shell found in the Hawkesbury formation.

Mr. Wilkinson also exhibited samples of the Volcanic Ash from, and photographs of the country about, Tarawera, New Zealand, taken a few days after the eruptions; in connection with which Mr. Wilkinson remarked that he considered that these thermal eruptions, which were described by Professor Stephens at the last Monthly Meeting of the Society, were primarily caused by movements in the earth's crust, along an old N.E. and S.W. line of disturbance. The numerous earthquakes would seem to show that New Zealand has been frequently affected by earth-movements, and judging from the numerous earthquake shocks experienced in Tasmania last year, Mr. Wilkinson suggested that they had been increased by the pressure upon the earth's crust of an unusual accumulation of snow and ice within the Antarctic Regions. He thought it not improbable that the moisture in the atmosphere, which did not fall during the past five years upon Australia as it normally does, passed overhead and was precipitated further to the south within the Antarctic Regions. Otherwise what has become of the moisture which should have fallen here as rain during the long season of drought through which we have just passed? In the Glacial Epoch, when there was a vast accumulation of snow and ice in the northern hemisphere, very great movements occurred in the earth's crust. If the explanation offered be correct, it is possible that more earthquakes may be shortly experienced.

WEDNESDAY, 25th AUGUST, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

Mr. T. B. Lindsay was present as a visitor.

The President called attention to the Circulars issued by the Antarctic Exploration Committee appointed by the Royal Society of Victoria and the Geographical Society of Australasia.

He also announced that the next excursion had been fixed for Saturday, September 11th ; Members to meet at No. 2 Jetty, Circular Quay, at 10 o'clock, a.m., to proceed to Middle Harbour, Dr. Ramsay in charge. Refreshments will be provided.

DONATIONS.

" Bulletin of the Museum of Comparative Zoology at Harvard College." Vol. XII., No. 4. March, 1886. From the Curator.

" Bulletin of the American Geographical Society." No. 1, 1886. From the Society.

"Journal of the New York Microscopical Society." Vol. II., No. 4. April, 1886. From the Society.

" The Goldfields of Victoria. Reports of the Mining Registrars for the quarter ended 31st March, 1886." From the Secretary for Mines, Melbourne.

"Archives Nêerlandaises des Sciences exactes et naturelles." Tome XX., Livraisons 4me. et 5me. 1885; "Liste Alphabétique de la correspondance de Christiaan Huygens, qui sera publiée par la Société." De la part de la Société Hollandaise des Sciences à Harlem.

"Mémoires du Comité Géologique, St. Pétersbourg." Vol. II., No. 3, 1886; "Bulletins." Vol. V., Nos. 1-6, 1886; "Bibliothéque géologique de la Russie rédigée par S. Nikitin, 1, 1885." From the Committee.

"Zoologischer Anzeiger." IX. Jahrg. Nos. 226, 227. From the Editor.

"Transactions and Proceedings of the New Zealand Institute." Vol. XVIII., 1885; Index. Vols. I-XVII. From the Director.

"Notes on some Irish Fishes;" "Catalogue of the Fishes of N. S. Wales with their principal synonyms." By J. Douglas-Ogilby, Assist. Zoologist, Australian Museum. From the Author.

"Revue Coloniale Internationale." Tome III., No. 1. July, 1886. De la part de l'Association Coloniale Nêerlandaise à Amsterdam.

"Bulletin de la Société Impériale des Naturalistes de Moscou." Tome LXI. (1885), Nos. 3 and 4; Tome LXII. (1886), No. 1. From the Society.

"Feuille des jeunes Naturalistes." No. 189, July, 1886. From the Editor.

"The Provincial Medical Journal." Vol. V., No. 55. July, 1886. From the Editor.

"Description of some remains of the gigantic Land Lizard (*Megalania prisca*, Owen) from Queensland, Australia, including Sacrum and Foot-Bones. Part IV. (Abstract). By Sir Richard Owen, K.C.B., F.R.S. From the Author.

"Victorian Naturalist." Vol. III., No. 4. August, 1886; Sixth Annual Report, (1885-6), and List of Members. From the Field Naturalists' Club of Victoria.

"Transactions of the Entomological Society of London for the year 1886." Part II. From the Society.

"Journal of the Bombay Natural History Society." Vol. I., No. 3. July, 1886. From the Society.

"Bulletin de la Société Zoologique de France." Tome XI., Nos. 1-3, 1886. From the Society.

"Comptes Rendus des Séances de l'Académie des Sciences," Paris. Tome CII., Nos. 20-23, 18 86. From the Academy.

"Jahreshefte des Vereins für Vaterländische Naturkunde in Württemberg," Jahrgang XLII., 1886. From the Society.

"Abstract of Proceedings of the Royal Society of Tasmania." July and August, 1886. From the Society.

"The Quarterly Journal of the Geological Society of London." Nos. 129-166. February, 1877 to May, 1886. From the Society.

"On the Geology of Scinde Island," and two other papers. By Capt. F. W. Hutton, F.G.S. From the Author.

"Annuario del Museo Zoologico della R. Università di Napoli." Anni I–VI., 1862 to 1871. From W. A. Haswell, Esq., M.A., B.Sc.

PAPERS READ.

NOTE ON *EUCALYPTUS LEUCOXYLON* (F. v. M.).

By W. Woolls, Ph.D., F.L.S.

When Vol. III. of the *Flora Australiensis* was published, I was firmly persuaded that two very distinct species of *Eucalyptus* had been united together under the name *E. leucoxylon* (F. v. M.), the one representing a "White Gum" of Victoria and South Australia, and the other the "Red-flowering Iron-bark" of New South Wales (*E. sideroxylon*, A. Cunn. in Mitchell's Tropical Australia, p 339). Having subsequently had an opportunity of examining *E. leucoxylon* in a living state in Victoria, and the red-flowering variety of the same cultivated in the Rev. Dr. Cameron's garden at Richmond, and also of comparing specimens of the respective trees with the figures of the species in Brown's "*Forest Flora of South Australia*," I have no hesitation in recommending that Cunningham's name should be restored to our Red-flowering Iron-bark. The Victorian and South Australian *E. leucoxylon* is a "Gum" with smooth bark, of moderate size (seldom exceeding 20 or 30 feet), and wood remarkable for its *pale* colour. According to Brown, the bark is deciduous in December, and in the young trees "it is yellow or reddish-green in colour, quite smooth, and somewhat shining," while the wood, which "when dry is hard and tough, is of a yellowish-white or pale pinkish-white." The tree associated with this is a very deeply furrowed Iron-bark, common to several places on this side of the Dividing Range, as well as in the interior. The bark of it is persistent, and the wood, though not so tough as that of the White Iron-bark (*E. paniculata*, Sm.), is of a *very dark* colour, and useful for fencing and carpenter's rough work. The late Sir William Macarthur when collecting woods for the Paris Universal Exhibition of 1867, did me the honour to consult me about this Iron-bark, and having, by my direction, found a tree suitable for his purpose not far from Lansdowne Bridge on the Liverpool-road, he procured specimens of the timber. According to Sir William, the average height of the species is from 40 to 60 feet, with a diameter of 18 to 30 inches, but in other localities it rises sometimes to 80 or 100 feet, with a proportionate diameter, and affords a considerable amount of timber. This tree possesses a large quantity of kino in its bark, which resin is little inferior to that procured from *E. siderophloia* (Benth.), and is used medicinally in cases of dysentery.

From a general view of the "White Gum" of South Australia and Victoria, and the "Red-flowering Iron-bark" of New South Wales, no practical man would suppose that they could be varieties of one species; nor, indeed, according to Baron Mueller's cortical system, would they stand even in the same section, the one belonging to the *Leiophloiæ* and the other to the *Schizophloiæ*. But even supposing that the differences of bark and wood may have arisen from geological considerations, or the influence of climate, the two trees differ in other respects.

In the "White Gum," the true *E leucoxylon* (F. v. M.) the young leaves are opposite and sessile; the flowers large, of a deep red colour, and generally in threes; the pedicels longer than the peduncles; the leaves inclining to ovate-lanceolate, somewhat thick, and abounding with volatile oil; and the fruit large with a thick rim; whilst the anthers open at the top in pores. In the "Red-flowering Iron-bark," the young leaves are alternate and stalked; the flowers smaller, of a lighter colour, and in umbels of six or seven florets; the peduncles and pedicels longer and nearly equal; the leaves thinner and more lanceolate; the fruit smaller with a narrower rim and more ovate in shape; whilst the anthers are very small with many of the outer stamens anantherous.

The "Red-flowering Iron-bark," as well as the "Red-flowering Gum," have occasionally white flowers; but the character of the bark and wood, the general habit of the trees, and the differences noted (though not perhaps always constant), indicate that *E. leucoxylon* and *E. sideroxylon* must be regarded as distinct species.

CONTRIBUTIONS TOWARDS A KNOWLEDGE OF THE COLEOPTERA OF AUSTRALIA.

By A. Sidney Olliff, F.E.S.,
Assistant Zoologist, Australian Museum.

No. III.—On the Genus *Nascio* (Fam. Buprestidæ).

In a recent number of the 'Notes from the Leyden Museum' (vol. viii., p. 121), Mr. J. R. H. Neervoort van de Poll, has turned his attention to the Buprestid genus *Nascio,* and has published a synopsis of the species including three new forms. Of these latter I have succeeded in identifying the *Nascio simillima* which I have seen from the Endeavour River, Cloncurry and Port Denison, Queensland. *N. carissima* (Waterhouse, Aid. I., pl. 95), occurs in the vicinity of Sydney, where I have taken it in the flowers of *Angophora,* and there is a specimen from Tasmania in the Macleay Museum. All the other recorded species of the genus are known to me, and I now have the satisfaction of adding three more to the list.

Nascio chydaea, sp. n.

Elongate, moderately broad and convex, very dark coppery bronze, somewhat opaque; head and prothorax coarsely and closely punctured; each elytron with two broad yellow fasciæ and the apex provided with inconspicuous spines.

Head densely punctured, with a distinct median line, which is slightly impressed in the middle. Prothorax moderately convex, slightly narrower in front than behind, as strongly and closely punctured as the head, with two foveolate inpressions on the disc, one on each side of the middle, and a third much smaller one in the middle at the base; the anterior margin slightly produced in the middle; the sides somewhat narrowed in front, slightly constricted near the posterior angles which are acute and projecting; the basal margin nearly straight. Scutellum small, slightly concave. Elytra broader than the prothorax at the base, strongly and closely punctate-striate, the striæ impressed at the base, the interstices moderately broad and strongly punctured, with two yellow fasciæ one before the other considerably behind the middle extending from the sides to just before the suture; these fasciæ are rather broad at the sides, and gradually decrease in width as they approach the suture. Underside bronzy, somewhat shining; sterna rather closely and strongly punctured; abdominal segments less strongly punctured. Legs distinctly punctured. Length, 11-13 mm.

Rope's Creek, New South Wales; Salt River, West Australia.

Three specimens of what I take to be the female of the insect described above have a much broader and more convex prothorax without the two discal impressions, the median line on the head very indistinct, and the apex of the elytra rounded and not provided with spines.

A very distinct species which is, perhaps, best placed between *Nascio simillima* and *N. xanthura.*

NASCIO MUNDA, sp. n.

Elongate, metallic green, shining, with purplish reflections, moderately narrowed behind; the head and prothorax rather dull coppery, the latter purplish in the middle; the underside bright coppery; the apex of the elytra provided with inconspicuous spines.

Head strongly and closely punctured, coppery in front, purplish between the eyes at the base. Prothorax slightly convex, narrowed in front, strongly and closely punctured, with a small foveolate impression in the middle at the base; the anterior margin very slightly produced in the middle ; the sides slightly constricted before the posterior angles which are acute and projecting ; the posterior margin bisinuate. Scutellum transverse, rather deeply impressed in the middle. Elytra rather strongly and closely punctate-striate, the interstices distinctly punctured, the ridges moderately elevated, the sides with the apical half finely serrate. Underside bright coppery, very sparingly pubescent ; the prosternum rather strongly, irregularly and very closely punctured ; the meso- and metasternum less strongly and closely punctured ; abdominal segments much less strongly and closely punctured. Legs coppery green. Length, 8 mm.

Cairns, North Queensland (Macleay Museum).

This species belongs to section b. β. of van de Poll's synopsis, but differs from its allies in the absence of yellow spots on the elytra. From *Nascio viridis* it differs not only in this particular, but also in having the prothorax, which is narrowed in front, proportionately shorter and the interstices between the elytral striæ and the sides more regularly punctured.

NASCIO MULTESIMA, sp. n.

Elongate, metallic green, shining, moderately strongly narrowed behind ; the head and prothorax rather dull coppery, the underside bright coppery ; the apex of the elytra provided with inconspicuous spines.

Head strongly and very closely punctured, coppery. Prothorax slightly convex, about as broad in front as behind, strongly and very closely punctured, with a small foveolate impression in the middle at the base; the anterior margin very slightly produced in the middle ; the sides straight ; posterior angles acute and projecting. Scutellum transverse, slightly concave and finely punctured. Elytra moderately strongly punctate-striate, the interstices finely punctured, the ridges moderately elevated, the sides with the apical third finely serrate. Underside bright coppery, very finely and not very closely pubescent; the prosternum rather strongly and closely punctured; the mesosternum, metasternum, and abdominal segments much less strongly punctured. Length, 6 mm.

Wide Bay, Queensland.

This species resembles *Nascio munda* in having no yellow spots on the elytra, but may be separated by its more strongly punctured head, by its much less strongly punctate-striate elytra, and by its more parallel-sided prothorax; the interstices between the elytral striæ and the sides are very irregularly punctured, in which respect it approaches *N. viridis.*

LIST OF THE ORCHIDEÆ OF THE MUDGEE DISTRICT.

By Alex. G. Hamilton.

My object in compiling this list is to contribute something towards a knowledge of the geographical distribution of plants in New South Wales. At some future time I hope to be able to give a list of the remaining phanerogamous plants, and of the ferns.

Most of the species herein mentioned have been collected by myself, and determined by Mr. R. D. Fitzgerald from fresh specimens. For the names of a few species which I have not myself collected, I am indebted to a list given me by Dr. Woolls, of plants which he collected when on a trip to Mudgee. I have to thank both these gentlemen for their assistance in this and many other matters of the kind.

Some of the species, notably those belonging to the genus *Caladenia*, are not considered good by some authors, but Mr. Bentham points out, (in the Flora Australiensis) that the study of the plants in a fresh state may afford some characters which will separate those that in a dry state appear to be mere varieties, and such study leads me to think that the species in question are good ones. It is on the examination of fresh specimens that Mr. Fitzgerald bases the diagnoses of the species in his elaborate work on Australian Orchids.

The greater number of the species mentioned have been collected within a radius of five miles from Guntawang. The country here is a fair specimen of the district generally, including rocky and barren hills, moist, shady and fertile gullies, open timbered country, and rich flats on the banks of the Cudgegong River. I have also collected around Cullenbone, Reedy Creek, Two-Mile Flat, and Mudgee, but have found no species differing from those at Guntawang, with the exception of *Dendrobium* *speciosum* and *Sturmia reflexa*, which Mr. J. D. Cox and myself collected in Mullamuddy Gully, about 5 miles from Mudgee. At Cooyal on the Dividing Range distant about 18 miles from Mudgee, I found a large number of the ordinary species of the district, and some peculiar to that locality. The geological formation is Hawkesbury sandstone, and, as might be expected, the plants there bear a marked resemblance to those of the Blue Mountains, and of that part of the coast district where sandstone prevails. Unfortunately it lies so far away from me that I have not been able to make a complete collection. I am sure that if I could examine the place thoroughly it would yield many additional species.

1. STURMIA REFLEXA, F. v. M.

This plant I have found only on rocks facing south in shady ravines at Cooyal, and at Mullamuddy. The flowering season is from June to September, but some plants in my garden flowered as early as April 1st.

2. DENDROBIUM SPECIOSUM, Smith.

At Cooyal on sandstone, and at Mullamuddy on basalt. The plants at the latter place had the finest racemes of flowers I have ever seen. It flowers in October.

3. DENDROBIUM TERETIFOLIUM, R.Br.

Collected at Cooyal on moist sandstone rocks, associated with *Hymenophyllum tunbridgense*. The plant was small and stunted.

4. DIPODIUM PUNCTATUM, R. Br. var. *Hamiltonianum*, Bailey.

I have collected the ordinary purplish-red form of this plant at Cooyal, on both eastern and western slopes of the Dividing Range. The yellow variety figured by Mr. Fitzgerald in Aust. Orchids, Part 7, pl. 4, extends from Guntawang to Cooyal (21 miles), and on one occasion I collected it on the eastern slope of the Dividing Range there. But the purple-flowered plant I have not seen away from the sandstone. Of the yellow variety, Mr. Fitzgerald says—"It may possibly be *D. squamatum*, referred to (in a note) by Bentham, in the Flora Australiensis, as from New Caledonia." But the plants which I sent Mr. Fitzgerald must have altered in colour, as he tells me they were greenish when he got them, and were figured so, whereas when I packed them up, they were yellow inclining to orange. Mr. F. M. Bailey, who courteously sent me some dried flowers, described it as a variety of *D. punctatum* under the name *Hamiltonianum*, in Proc. Linn. Soc. of New South Wales, Vol. VI, page 140. He informs me that he collected it at Stanthorpe and on Moreton Island, but makes the same remark as to the colour being yellow.

The purple form flowers in December and January; the yellow from November to January. Judging from the few flowers that mature seed, I think it depends on insects for fertilisation.

5. THELYMITRA LONGIFOLIA, Forst.

Common all over the district. It flowers from September to October. As it seldom opens its flowers and yet invariably bears seed, it must be self-fertilised.

6. THELYMITRA MEGCALYPTRA, R. D. F.

Aust. Orch. Vol. I., Pt. 5, 1871.

There are many varieties of colour in this flower ranging from pure white, through pink to dark lilac. It is generally distributed over the district, and from its large size is worthy of cultivation. It flowers from September to October, opening about noon, and remaining open later each day till fertilised, or till it withers. As it seeds freely, it must be much visited by insects, but I have never been able to observe the process of fertilisation taking place.

7. THELYMITRA NUDA, R. Br.

This is one of the plants I have not found. It has been collected by Dr. Woolls in this district.

8. Diuris aurea, Sm.

Flowers in September and October.

9. Diuris maculata, Sm.

Widely distributed. Flowers in September and October.

10. Diuris pedunculata, R. Br.

Found all over the district. It is the first of the family to blossom, beginning early in August, and lasting well on into September. It bears seed very freely from its being frequented by a small brown and hairy beetle (*Liparetrus* sp.), which gnaws the ridges off the labellum, and at the same time fertilises the plant.

11. Diuris abbreviata, F. v. M.

This species frequents the hills, and flowers from the beginning of October till early in November. It is sometimes fertilised by a folding-back of the stigma, a striking exception to the other members of the genus, which are sterile without the aid of insects. In this respect it approaches *Orthoceras strictum.*

12. Diuris sulphurea, R. Br.

Common on the lowlands. Flowers in September and October.

13. Diuris tricolor, R. D. F.

Jour. Bot. Vol. XXIII. 1885, p. 135.

Mr. Fitzgerald named this plant from specimens which I sent him. It is common all over the district, but cannot be mistaken for any other species. It is nearest to *D. elongata,* but differs much in habit as well as in structure. Baron von Mueller, to whom I sent some dried plants, informs me that he has had it from other localities.

14. DIURIS ELONGATA, R. Br.

This is *D. punctata* of the Flora Australiensis, and *D. lilacina* of Baron von Mueller. A variety *D. longissima* is recorded in the Flora as having been collected at Mudgee. It is the latest *Diuris* to flower, lasting from the middle of September well on into December. There is a considerable amount of difference between the hill and the lowland forms.

15. DIURIS DENDROBIOIDES, R. D. F.

A very rare orchid. Flowers in September.

16. CALOCHILUS CAMPESTRIS, R. Br.

Flowers in the latter end of September. Sometimes fertilised like *Diuris abbreviata*, by a folding-back of the stigma.

17. PRASOPHYLLUM FLAVUM, R. Br.

I have only once found this species, at Reedy Creek, but it was also collected by Dr. Woolls. Flowers in November.

18. PRASOPHYLLUM BREVILABRE, J. Hooker.

Flowers from end of August till end of October.

19. { PRASOPHYLLUM PATENS, R. Br.
„ „ var. *truncatum*, Lindl.

Flowers in September and October.

20. { PRASOPHYLLUM FUSCUM, R. Br.
„ „ var. *grandiflorum.*

Recorded in the Flora Australiensis as collected at Mudgee by Dr. Woolls.

21. PRASOPHYLLUM ALPINUM, R. Br.

On the hills. Flowers in November.

22. PRASOPHYLLUM RUFUM, R. Br.

Rare. On flats and creek-banks. Flowers in May and June.

23. MICROTIS PORRIFOLIA, Spreng.

Flowers in October and on into December.

24. MICROTIS PARVIFLORA, R. Br.

Flowers about the same time as its congener.

25. CORYSANTHES — n. sp.

This plant I have discovered only this year. So far as I know it is a very local plant, only growing in one gully of the Beaudesert Hills. It must be a shy bloomer, as I have searched the same place every year since 1878, and this is the first time I have seen it. It is at present in Mr. Fitzgerald's hands for description. It comes nearest to *C. pruinosa.* Flowers in July and August.

26. PTEROSTYLIS CONCINNA, R. Br.

Generally distributed in moist gullies. Flowers from June to September.

27. PTEROSTYLIS STRIATA, R.D.F.

Rare. I know only one place in the Beaudesert Hills where this plant grows. Flowers in July.

28. PTEROSTYLIS CURTA, R. Br.

Common in shady corners among the hills and rocks. Flowers from July to October.

29. PTEROSTYLIS ACUMINATA, R. Br.

Collected by Dr. Woolls.

30. PTEROSTYLIS NUTANS, R. Br.

Confined to one spot in Biraganbil hills, and to a gully at Cooyal. Flowers in June and July.

31. PTEROSTYLIS CLAVIGERA, R.D.F.

R. D. Fitzgerald, Jour. of Bot. Vol. XXIII., p. 135.

Named from specimens procured from Biraganbil Hills. Near *P. nana,* but it has glands on the anther wings. Flowers in September.

32. PTEROSTYLIS REFLEXA, R. Br.

There are two well-marked varieties of this plant growing in the neighbourhood of Guntawang, which I took to be distinct species. Both are figured in Australian Orchids, Vol. I., pt. 5, pl. 7. The larger variety may possibly be the plant named *P. revoluta* by R. Brown, but Bentham says that the two forms pass into each other to such an extent that it was impossible to sort specimens into distinct varieties even. As I had never collected any plant linking the two I thought them good species till Mr. Fitzgerald on receiving both from me gave me the above information. Flowers from March till July.

33 PTEROSTYLIS OBTUSA, R. Br.

Found only at Cooyal in rich soil at the foot of a sandstone cliff. Flowers in April.

34. PTEROSTYLIS PARVIFLORA, R. Br.

The plants I sent Mr. Fitzgerald he informed me were *P. aphylla,* but added that he considered this only a variety of *P. parviflora,* so I have placed it under that name. It is generally distributed but is not very abundant. Flowers in April, May, and June.

35. PTEROSTYLIS MUTICA, R. Br.

Common in all parts. Flowers from August to October.

36. PTEROSTYLIS CYCNOCEPHALA, R. D. F.

Also a common plant, but begins a little later than the preceding, and rarely lasts past the middle of September.

37. PTEROSTYLIS RUFA, R. Br.

Generally distributed. Flowers in September and November, but I have found it as early as July.

38. PTEROSTYLIS MITCHELLI, Lind.

Common. Generally considered a variety of No. 37, but they seem very distinct indeed to me. Flowers in September, October, and November.

39. PTEROSTYLIS SQUAMATA, R. Br.

Another form usually included in *P. rufa.* Generally distributed on rocky hill-sides. Flowers from September to November.

40. PTEROSTYLIS WOOLLSII, R. D. F.

Plentiful on the eastern slope of the Beaudesert Hills. Flowers in October, November, and December.

Dr. Woolls also collected *P. gibbosa*, which belongs to the same group as the preceding four, but I believe it is now generally considered to be a variety only.

41. PTEROSTYLIS LONGIFOLIA, R. Br.

This variety differs from Mr. Fitzgerald's figure in having a perfectly smooth labellum. It flowers from June to September.

42. CALEANA MINOR, R. Br.

Very rare. Flowers in November.

43. ACIANTHUS FORNICATUS, R. Br.

Very common. Flowers from April to September.

44. CYRTOSTYLIS RENIFORMIS, R. Br.

Common. Flowers from August to October.

45. LYPERANTHUS SUAVEOLENS, R. Br.

(*Caladenia suaveolens* in the Flora Australiensis).

It has been objected to the specific name that the plant is not at all sweet-scented, but I have repeatedly noticed that it has a very rich scent when exposed to hot sun. It is very local Flowers from September to November.

46. ERIOCHILUS AUTUMNALIS, R. Br.

Common everywhere. Flowers from March to May. In experimenting on this plant I have repeatedly noticed a viscidity of the pollinia, so that when it is attempted to withdraw them from the anthers a piece sometimes draws out into a glutinous thread, which on being stretched flies back, and carries with it a piece of the pollen. This sometimes strikes the stigma and adheres. In this way the plant is possibly often fertilised by its own pollen with the help of insects.

47. CALADENIA CLAVIGERA, A. Cunn.

Rather rare. Flowers in September and October.

48. CALADENIA DILATATA, R. Br.

Common. Flowers from September to November.

49. CALADENIA ARENARIA, R. D. F.

Rare. Flowers in October and November.

50. CALADENIA FILAMENTOSA, R. Br.

Common on stony hill-sides. Flowers in August and September.

51. CALADENIA CUCULLATA, R. D. F.

Collected at Guntawang, Goodaman, and Cooyal. It has a most abominable smell, and on more than one occasion I have had a cloud of blowflies round me when carrying specimens. It is possible that these may be the insects which fertilise this plant. Flowers in October.

52. CALADENIA CARNEA, R. Br.

Common. This is the first *Caladenia* to flower. From the middle of August to October.

53. CALADENIA ALBA, R. Br.

Collected at Cooyal in September, by Dr. Woolls.

54. CALADENIA CÆRULEA, R. Br.

Common. August to October.

55. CHILOGLOTTIS FORMICIFERA, R D. F.

Collected only at Cooyal. Flowers in September.

56. CHILOGLOTTIS TRAPEZIFORMIS, R. D. F.

Guntawang, Cooyal, Mullamuddy. Flowers in September and October.

57. GLOSSODIA MAJOR, R. Br.

Common all over the district. Flowers from the end of August to the end of October.

Many of the species especially those growing in open flat country are becoming scarce, and will, I fear, sooner or later become extinct. This may be attributed to many causes, the chief being the struggle between introduced and indigenous plants, to the gradual change in many respects produced by ringbarking and clearing, and to the destruction of the plants by cattle, sheep, &c. Sheep are especially fond of the different species of *Diuris*, and few of these plants have any chance of flowering where these animals graze

I append a table of the Mudgee species showing their distribution to other colonies and to the County of Cumberland. This is compiled from the lists given in Mr. R. D. Fitzgerald's Australian Orchids Vol. I., Dr. Woolls' Plants indigenous to the neighbourhood of Sydney, Baron Mueller's Census of Australian Plants, Mr. Bailey's Classified Index of Queensland Plants, and Rev. W. Spicer's Handbook of the Plants of Tasmania. This table is not so complete as I should like on account of difficulties in the synonymy. For instance Baron Mueller in his Census does not mention *Caladenia clavigera*, *C. dilatata*, *C. filamentosa*, and *C. arenaria*, as he considers them merely varieties of *C. Patersoni*, I believe.

The numbers opposite each genus show how many species of it have been found in the different colonies.

TABLE

SHOWING DISTRIBUTION TO OTHER COLONIES :—

NAMES.	County of Cumberland.	Queensland.	Victoria.	Tasmania.	South Australia.	West Australia.	REMARKS.
Sturmia ...	1	5	...	...	...	...	
reflexa	*	*	...	...	...	...	
Dendrobium	4	34	2	1	...	...	
speciosum	*	*	*	...	...	...	
teretifolium	*	*	...	...	...	...	
Dipodium	1	2	1	1	1	...	
punctatum	*	*	*	*	*	...	
var. Hamiltonianum	...	*	...	..	...	...	
Thelymitra	4	2	8	7	9	13	
longifolia	*	*	*	*	*	*	
megcalyptra	...	...	...	...	...	...	Not in Census.
nuda	...	...	...	...	...	...	,, ,,

TABLE SHOWING DISTRIBUTION TO OTHER COLONIES—*continued*:—

NAMES.	County of Cumberland.	Queensland.	Victoria.	Tasmania.	South Australia.	West Australia.	REMARKS.
Diuris	5	7	6	5	6	4	
aurea	*	*	*	*	*	...	
maculata	*	*	*	*	*	...	
pedunculata	*	*	*	*	*	...	
abbreviata	...	*	...	...	...	...	
sulphurea	*	...	*	*	*	...	
tricolor	...	...	...	...	...	...	Not in Census.
elongata (punctata)	*	...	*	...	*	...	
dendrobioides	...	...	...	...	..	...	Not in Census.
Calochilus	2	2	2	1	1	1	
campestris	*	*	*	*	...	...	
Prasophyllum	9	6	10	12	8	9	
flavum	*	*	*	*	*	...	
brevilabre	...	*	*	*	...	...	
patens	*	*	*	*	*	...	
fuscum	*	*	*	*	*	...	
alpinum	...	...	...	...	...	...	Generally considered a variety of *P. fuscum*.
rufum	*	*	*	*	...	...	
Microtis	2	2	3	2	2	5	
porrifolia	*	*	*	*	*	*	
parviflora	*	*	*	*	*	*	
Corysanthes	4	1	1	1	1	1	
n. sp.	...	...	...	...	...	...	From Mudgee only as yet.
Pterostylis	15	10	17	14	13		
concinna	*	*	*	...	*	...	
striata	...	...	...	...	...	...	Not in Census.
curta	*	*	*	*	*	...	
acuminata	...	*	*	...	...	...	
nutans	*	*	*	*	*	...	
clavigera	...	...	...	...	...	...	From Mudgee only
reflexa	*	...	*	...	*	*	
obtusa	*	*	*	*	...	...	
parviflora	*	*	*	*	...	...	
mutica	*	*	*	*	*	...	
cycnocephala	...	...	...	...	...	...	Not in Census.
rufa	*	*	*	*	*	*	
Mitchelli	...	...	*	...	...	...	Not in Census.

TABLE SHOWING DISTRIBUTION TO OTHER COLONIES—*continued:*—

NAMES.	County of Cumberland.	Queensland.	Victoria.	Tasmania.	South Australia.	West Australia.	REMARKS.
Pterostylis squamata	...	...	...	...	...	...	Not in Census.
Woollsii	...	...	...	...	...	...	,, ,,
longifolia	*	*	*	*	*	...	
Caleana	2	1	2	2	...	1	
minor	*	...	...	*	...	...	
Acianthus	3	1	2	3	2	1	
fornicatus	*	*	...	...	..	...	
Cyrtostylis	1	1	1	1	1	1	
reniformis	*	*	*	*	*	*	
Lyperanthus	2	...	3	3	1	2	
suaveolens	...	...	*	*	...	...	(=*Caladenia suaveolens.*)
Eriochilus	1	1	2	1	2	5	
autumnalis	*	*	*	*	*	...	
Caladenia	6	3	9	10	10	25	
clavigera	...	...	*	*	...	...	*Caladenia Patersoni*, under which name some of these are included by some authors, is found in Q., N.S.W., V., S.A., & W.A.
dilatata	...	...	...	...	*	*	
arenaria	...	...	...	...	...	...	
filamentosa	...	...	...	*	*	*	
cucullata	...	...	...	...	...	...	Not in Census.
carnea	*	*	*	*	*	...	
alba	*	*	...	...	...	...	
cærulea	*	*	*	*	*	...	
Chiloglottis	3	1	4	2	...	...	
formicifera	*	...	...	...	...	...	
trapeziformis	*	...	*	...	...	...	
Glossodia	2	2	2	1	1	3	
major	*	*	*	*	*	...	
Total common genera...	18	17	18	17	14	14	
Total common species...	35	32	34	29	25	8	

Appended is a table giving an approximation to the number of genera and species, and the number of common genera and species also :—

	Cumbrld.	Q.	V.	T.	S.A.	W.A.
Total genera	26	44	22	21	17	17
Total species	78	156	80	71	61	83
Total genera common to Mudgee	18	17	18	17	14	14
Total species ,, ,, ...	35	32	34	29	25	8

The Cumberland genera not represented here are *Bolbophyllum*, *Sarcochilus*, *Cymbidium*, *Galeola*, *Gastrodia*, *Spiranthes*, *Orthoceras*, and *Cryptostylis*. I believe I collected *Cymbidium canaliculatum* here some years ago, but at this length of time cannot be certain, having unfortunately neglected to make drawings or preserve specimens. The eight above-mentioned genera are mostly epiphytal, or semi-epiphytal. The absence of these plants is doubtless due to the dryness of the climate and soil. This is rendered probable by the fact that in the gullies at Cooyal and Mullamuddy, two species of *Dendrobium* and one of *Sturmia* flourish. In these gullies, on account of the depth and shade, there is much more moisture than is found in similar places among lower hills.

The plant which I suppose to have been *Cymbidium* was collected in the same gully as the new species of *Corysanthes*, which is also a moisture-loving form, and almost confined to the coast district and mountains. I cannot understand why *Orthoceras strictum*, *Caleana major*, and *Cryptostylis* do not extend to this district, as they are capable of resisting a considerable amount of drought. I fully expected to find them on the Dividing Range at Cooyal, but was disappointed.

We cannot be said to have any species—much less a genus peculiar to the district, *Diuris tricolor* having been collected elsewhere. *Pterostylis clavigera* and *Corysanthes* (n. s.) may have been overlooked on account of their being so small and inconspicuous.

ON AN UNDESCRIBED SPECIES OF *CHILODACTYLUS* FROM PORT JACKSON.

By E. P. Ramsay, L.L.D., F.R.S.E., and J. Douglas-Ogilby.

Chilodactylus morwong, sp. nov.

B. VI. D. 19-18/27-29. A. 3/16-17. V. 1/5. P. 8/7. C. 17. L. lat. 55 on body 6 on tail. L. trans. 7/18-19.

Length of head 4·20, of caudal fin 4·70, height of body 3·20 in the total length. *Eyes*—diameter 5·00 in the length of the head, 2·66 in that of the snout, and 1·20 in that of the interorbital space, which is convex. The upper profile of the head is almost straight to above the posterior margin of the eye, whence it rises with a gentle convexity to the origin of the dorsal fin. The abdominal profile forms a sharp keel as far as the ventral fins. The upper jaw is rather the longer; the lips fleshy. The maxilla extends about two-thirds of the length of the snout. *Teeth*—in villiform bands in both jaws, with an outer enlarged row, the teeth composing which are of a conical shape and apart from one another *Fins*—the dorsal fin is low, the fifth to eighth spines being the longest, and equal to a third of the length of the head; the notch between the spinous and soft portions slight: the second anal spine is rather longer, but equally as strong as the third: the ventrals do not quite reach to the anus: the second undivided pectoral ray is rather more than a third of the length of the body, and reaches to the fourth anal ray: the caudal is deeply forked. We were unable to detect any pyloric appendages. *Colors*—grey, darker above, most of the scales having golden reflections, a broad dark band between the eyes; a narrow violet band round the eyes; all the fins, except the ventrals are darker in color than the body, and the dorsal and anal are ornamented with one or two rows of golden spots; irides golden.

The example described was obtained in Botany Bay, on the 6th of the present month, is in fine condition, and measures 24·75 inches. It shewed no signs of breeding. Registered number I. 769. There is a second mounted specimen in the show collection from Port Jackson.

This species is the true "Morwong" of the Sydney Market, in contra-distinction to *Chilodactylus macropterus*, Rich., which is known as the "Jackass-fish." As a food fish either species equals any fish that is brought to market here.

Our fish is evidently the eastern analogue of *C. carponemus*, C. & V., and may be identical therewith, but in face of the meagre descriptions hitherto published of the Australian *Chilodactyli*, we fully describe this specimen, having come to the determination that we will admit as Australian no fish which has not been properly characterised.

We wish also to mention that through the kindness of Austin J. Cockle, Esq., M.B., the Australian Museum has during the past month become possessed of a fine specimen of the rare *Echeneis scutata*, Günth., from the Cape Seas.

NOTE.—The difference between this species, the true "Morwong," and the "Jackass-fish" of the Sydney Market (*Chilodactylus macropterus*, Rich.), having been pointed out several years ago by Dr. Ramsay, who exhibited specimens of each form both at the Melbourne Exhibition of 1880-1, and the International Fisheries Exhibition of 1883, under the respective names of *C. morwong* and *C. macropterus*, and as many specimens of the former species have been sent out by the Museum under the name of *C. morwong* we have considered it advisable to adhere to this name in place of that of *C polyacanthus* employed in the monthly sheet of the Linnean Society of New South Wales; more especially as "Morwong" was the name in use by the aborigines of Port Jackson.

NOTES AND EXHIBITS.

Dr. Ramsay exhibited a number of very rare birds from Derby, North West Australia, recently collected in that district by Mr. Cairns. He particularly drew attention to the following:—*Poephila acuticauda*, *Poephila mirabilis*, *Donacicola pectoralis*, *Emblema picta*, *Estrelda annulosa*, *Estrelda ruficauda*, *Pœcilodryas cerviniventris*, *Smicrornis flavescens*, *Pardalotus rubricatus*, *Pardalotus uropygialis*, *Malurus coronatus*, *Malurus cruentatus*, *Cacatua gymnopis*, *Climacteris melanura*, *Geophaps albiventris*, *Astur cruentus*, *Trichoglossus rubritorquatus*.

Mr. Douglas-Ogilby exhibited a photograph of *Chilodactylus morwong*, the fish described in Mr. Ramsay's and his paper.

Mr. Whitelegge exhibited under the microscope a fine gathering of Infusoria and Rotifers from the Waterloo Swamps, the most notable species being *Bursaria truncatella* Müller, *Stentor igneus* Ehr., *Hydatina senta* Ehr., *Euchlanis triquetra* Ehr., and *Asplanchna Brightwellii* Gosse. Specimens of the last-named species were also shown in spirits, having been killed by means of a mixture of spirits and chloroform with the *corona* fully extended.

Dr. Cox exhibited two fresh specimens of *Cypræa decipiens*, described by Mr. Edgar A. Smith in the Pro. Zool. Soc. Lon. for 1880, and made the following remarks. " The type specimen and till now the only specimen on record, is in the British Museum, and is 'in a worn state.' As Mr. Smith points out it is like a diminutive *C. thersites*. My specimens are all even smaller than the British Museum specimen, and the backs of all are characteristically high and humped. They have a flatter base than *C. thersites*, as pointed out by Mr. Smith, but the colour is darker than an orange-red, and almost amounts to a black with a tinge of red, doubtless owing to the specimens being quite fresh; the sides are quite as dark for fully two-thirds of their surface;

indeed one specimen is quite covered with this black-red porcellanous colouring. The apices of the backs of the shells as a rule are marked exactly as in *C. thersites.* None of my specimens show any disposition to be white upon either side of the aperture as is the case in that species. The teeth in them correspond in every way with Smith's description, but are very much darker, almost black. The interior is not white, but rather white with a bluish tinge; the teeth on the body whorl are dark red-brown, but just above the line of the teeth the surface is only stained lightly with brown. The interstices between the teeth are of the same dark colour as these, the number of which corresponds exactly with Smith's description. These specimens, which quite set aside any doubt which may have existed as to the validity of Mr. Smith's species, are from N.W. Australia, and were obtained from pearl-shell divers. It has been ascertained that the large green turtles feed on these molluscs, and some of my specimens show distinctly where they have been gripped by the sharp, powerful bills of these animals."

Mr. Masters exhibited a large collection of the magnificent Moth—*Nyctalemon Orontes*—from Cairns, Queensland. He also exhibited some eggs of what he believed to be the Painted Snipe, *Rhynchœa australis.*

Dr. Hurst exhibited some eggs which he had taken from a nest in a mangrove swamp, at Newington, with a view of ascertaining the name of the bird. Dr. Ramsay said he believed the eggs to be those of *Glyciphila ocularis.*

Mr. Macleay exhibited the following new or rare reptiles and fishes collected by Mr. W. W. Froggatt, in the vicinity of Cairns, Queensland. SNAKES: *Tropidonotus picturatus*, Schlegel, *Dipsas Boydii*, Macleay, *Hoplocephalus assimilis*, Macleay, *Hoplocephalus nigrostriatus*, Krefft, *Nardoa crassa*, Macleay, and *Dendrophis biloreal is*, Macleay. LIZARDS: *Varanus ocellatus*, Gray, *Varanus* sp. ?, *Hinulia*, n. sp., four species of Geckotidæ unknown one with tail of remarkable width, and several other unknown lizards. FISHES: *Dules Haswellii*, Macleay, *Aristeus rufescens,* Macleay, *Serranus lanceolatus*, Bleek. a species new to Australia, and a species of *Eleotris* probably undescribed, remarkable for its minute scales. Collected from the same district were a number of frogs, among which Mr. Fletcher pointed out examples of *Hyla dolichopsis*, *H. cœrulea*, *H. Lesueurii*, *H. Peronii*, *H. nasuta*, *H. gracilenta* (?), *Limnodynastes ornatus*, and two other species not determined.

Professor Stephens exhibited for Mr. Percy Faithful two good examples of grinding stones used by the aborigines as mortars for crushing grain, obtained from Springfield near Goulburn.

WEDNESDAY, 29TH SEPTEMBER, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

MEMBER ELECTED.

Dr. S. H. MacCulloch, Sydney, was elected a Member of the Society.

The President announced that two excursions had been arranged for the ensuing month :—

(1.) October 9th.—Members to meet at the Railway Station Penrith, at 11 a.m., to proceed by steamer to Norton's Basin, Nepean River. Steamer provided. Dr. Cox in charge.

(2.) October 23rd.—Members to meet at St. Mary's Station, G. W. R., at 11 a.m., for a walk towards Rooty Hill. Dr. Cox in charge.

DONATIONS.

"Abstract of Proceedings of the Royal Society of Tasmania." August, 1886. From the Society.

"Encyclopædia Britannica." Ninth Edition. Vol. XX. ; "Report of the Scientific Results of the Exploring Voyage of H.M.S. Challenger, 1873-1876. Zoology." Vol. XIV. ; "Notes from the Leyden Museum, edited by Dr. F. A. Jentink." Vol. VIII., No. 2, 1886 ; "Vergleichende Morphologie und Biologie der Pilze Mycetozoen und Bacterien," von A. de Bary ; "Dr. Johannes Leunis' Synopsis der Thierkunde." Two vols. Third Edition revised by Dr. Ludwig; "The Entomologist's Monthly Magazine." Vols. I.-XVIII., 1864-1882; "Text Book of Geology." By Archibald Geikie, L.L.D., F.R.S. From the Hon. William Macleay, F.L.S.

"The Sydney University Calendar," 1886. From the University.

"The Australasian Journal of Pharmacy." Vol. I., No. 8, 1886. From the Pharmaceutical Society of Australasia.

"Journal of the New York Microscopical Society." Vol. II., Nos. 5 and 6, 1886. From the Society.

"Journal of the Cincinnati Society of Natural History." Vol. IX., No. 2, 1886. From the Society.

"Proceedings of the Canadian Institute." Third Series. Vol. III., No. 4, 1886. From the Institute.

"The Native Plants of Victoria, succinctly defined." By Baron von Müller. Part I.; "Index perfectus ad Caroli Linnæi species Plantarum."; "Descriptive Notes on Papuan Plants." Nos. IV., V., VIII., and Appendix; "Key to the System of Victorian Plants." No. II.; "Systematic Census of Australian Plants." Third Annual Supplement (for 1885). By Baron Ferd. von Mueller, K.C.M.G., F.R.S. From the Author.

"Zoologischer Anzeiger." Jahrg. IX., Nos. 228-230, 1886. From the Editor.

"Mémoires de la Société Royale de Géographie d'Anvers." Tome III., 1886 From the Society.

"Mémoires de la Société des Naturalistes de la nouvelle Russie." Tome X. Pts. 1 and 2, 1886; "Die Fossilen Vogel-Knochen der Odessaer-Steppen-Kalk-Steinbrüche, &c. von J. Widhalm." From the Society.

"Australian Museum. Report of the Trustees for 1885." From the Trustees.

"Records of the Geological Survey of India." Vol. XIX., Part 3, 1886. From the Director.

"Revue Coloniale Internationale." Tome III., No. 2, 1886. De la part de la l'Association Coloniale Néerlandaise à Amsterdam.

"Feuille des jeunes Naturalistes." No. 190, August, 1886. From the Editor.

"The Canadian Record of Science." Vol. II., No. 3, July 1886. From the Natural History Society of Montreal.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CII., Nos. 24-26. Tome CIII., No. 1. From the Academy.

"Journal of the Linnean Society" (London). Botany. Vol. XXI., Nos. 138-140; Vol. XXII., Nos. 141-144; Vol. XXIII., No. 150; Zoology. Vol. XIX., Nos. 109-113; List of Members, 1885-6. From the Society.

"Proceedings of the Zoological Society of London for the year 1886." Part I. From the Society.

"Bijdragen Tot de Dierkunde." 13e. Aflevering, 4e. Gedeelte. De la part de la Société Royale de Zoologie, Natura Artis Magistra, Amsterdam.

"Victorian Naturalist." Vol. III., No. 5, 1886. From the Field Naturalists' Club of Victoria.

"Thirty-nine (39) Original Papers." By Capt. F. W. Hutton, F.G.S. From the Author.

"Bulletin of the Museum of Comparative Zoology, at Harvard College. Vol. XII., No. 5, July, 1886. From the Director.

"Bulletin of the American Geographical Society." No. 6, 1882. From the Society.

"The Mammals of Australia, illustrated by Miss Scott, and Mrs. Forde, for the Council of Education, with a short account of all the species hitherto described." By Gerard Krefft, F.L.S. From George Masters, Esq.

"Catalogue of the Free Public Library, Sydney (Reference Department), with four Supplements;" "Catalogue of the Free Public Library, Sydney (Lending Branch), with two Supplements;" "Fac-similes of Old Charts of Australia;" "Works on New South Wales," compiled under the direction of R. C. Walker, Principal Librarian. From the Trustees.

"Catalogue of the Library of the Parliament of New South Wales." From the Librarian.

"The Quarterly Journal of the Geological Society of London." Vol. XLII. Part 3., No. 167, August, 1886. From the Society

A REVISION OF THE STAPHYLINIDÆ OF AUSTRALIA.

By A. Sidney Olliff, F.E.S.,
Assistant Zoologist, Australian Museum.

Part II.

Sub-Family II.—TACHYPORINÆ.

Prothoracic stigmata conspicuous. Antennæ inserted under the lateral margin of the front before the eyes. Mandibles furnished on the inner side with a ciliated membrane which is partly free in most cases. No ocelli. Elytra sometimes longer than the sternum. A membranous space underneath the prothorax. The seventh abdominal segment not very distinct. Anterior coxæ large, conical and prominent; trochanters very distinct. Tarsi variable in the number of joints.

Tribe 1. TACHYPORINA.

Antennæ eleven-jointed. Head not margined. Tarsi five-jointed, first joint of the posterior pair moderate or short.

23. Tachinoderus.

Motschulsky, Bull. Mosc. III., p. 217 (1858).

Mouth-parts similar to those of Tachinus. Head sunk in the prothorax, small and transverse. Antennæ long, filiform, the first three joints elongate, the apical joint subulate, pointed at the extremity. Prothorax transverse, broader than the elytra, all the angles rounded. Scutellum large, rounded behind. Elytra longer than the prothorax. Mesosternum carinate. Abdomen only margined at the base. Legs short; tibiæ armed with small spines; tarsi 5:5:5, the first four joints gradually decreasing in length, the posterior pair with the 1st joint distinctly shorter than the 2nd.

Allied to *Tachinus* and *Cilea*, which it resembles in having a large scutellum and the mesosternum carinate, but distinguished by having its abdomen margined only at the base (and that very feebly), the elytra truncate at the extremity with their external apical angles straight, and the tarsi shorter.

88. TACHINODERUS HAEMORRHOUS.

Tachinoderus haemorrhous, Fauvel, Ann. Mus. Genov. X., p. 277 (1877).

T. fulvipedi vicinus, antennis paulo crassioribus, articulo 11.° apice tantum rufulo, capite majore, nigro, alutaceo, vix perspicue crebre punctulato, thorace breviore et latiore, subopaco, multo magis alutaceo, creberrime subtilissime punctulato, antice magis truncato, angulis anticis magis rotundatis, posticis fere rectis, retrorsum non prominulis; basi utrinque dilutiore, lateribus a basi ad apicem magis arcuatim angustatis; fossula supra scutellum parum profunda, latiuscula; scutello majore; (elytra desunt) (1); abdomine latiore et robustiore, minus nitido, magis conico, dimidio crebrius fortiusque punctato, segmento 5.° apice vix rufescente, 6.° 7.° que totis rufis, subtus dilutius; segmentis 3-4 punctis 2 tantum utrinque distantibus, 5.° punctis 4 fortioribus, aeque distantibus, in margine, 6.° punctis 4 aliis, magis elongatis, a margine paulo remotioribus notato; pedibus piceis, femoribus anticis, genubus, tarsisque rufis; ♂ segmento 7.° supra quadrifido, laciniis externis brevioribus, obtusis, intermediis ante apicem angustatis, acuminatis; subtus segmento 6.° medio apice vix rufo ciliato, 7.° latius quadrifido, laciniis intermediis longioribus, non acutis, intus sinuato-impressis, externis non acutioribus. Long. 7 mm. (*Fvl.*)

♀ latet.

North Australia; Cook's River, New South Wales; Tasmania.

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(1) From an examination of specimens obtained subsequent to the publication of this description Fauvel states (*l. c.* XIII., p. 563) that the elytra are black, slightly convex, transverse, and a little longer than the prothorax. They are finely and densely punctured, and are furnished with six or seven very obsolete striæ on the disc; the sides are finely margined.

89. TACHINODERUS AUSTRALIS.

Tachinoderus australis, Fauvel, Ann. Mus. Genov. X., p. 277 (1877).

Brevis, ovatus, sat convexus, nitidus, nigerrimus, elytris plus minusve virescentibus, palpis antennarumque articulis 4 primis rufis, pedibus piceis; antennis brevibus, robustis, ab articulo 5.° dilatatis, articulis 5-10 maxime transversis, 11.° acuminato; capite thoraceque obsoletissime crebre punctulatis, vix transversim striolatis, elytris vix fortius punctato-striolatis, quasi longitudinaliter obsolete multi-sulcatulis, abdomine dense sat fortiter aequaliter punctulato, segmento 3.° apice utrinque punctis 2 majoribus, 4.° 5.° 6.°que punctis 4 supra notatis; capite transverso, antice subtriangulari, thorace dimidio angustiore; hoc dimidio circiter latiore quam longiore, antice subarcuatim fortiter angustato, basi utrinque sinuato; angulis posticis acutis, sat proeminentibus; scutello vix striolato; Elytris basi thoracis latitudine, circa apicem sat angustatis, lateribus impresso-marginatis; abdomine conico; ♀ segmento 7.° supra parum profunde quadrifido, laciniis intermediis longioribus, apice acutioribus; subtus etiam quadrifido, laciniis intermediis multo longioribus, incisura profunde triangulari divisis. Long. 5 mm. (*Fvl.*)

♂ latet.

Cairns, Rockhampton, Wide Bay, Queensland.

Easily distinguished from the preceding species by its much more highly polished and less closely punctured surface. Both species appear to be common.

24. CONOSOMA.

Kraatz, Nat. Ins. II., p. 431 (1856)—*Conurus*, Stephens, Ill. Brit. Ent. V., p. 188 (1832); Lacordaire, Gen. Col. II., p. 53.

Body clothed with fine silky pubescence. Ligula bilobed; the lobes emarginate and armed with pubescence at the extremity. Labial palpi 3-jointed, the 2nd joint about half the length of the first and third. Maxillary palpi with the penultimate joint slightly clavate, the fourth small, subulate. Maxillæ corneous, the lobes nearly equal and pubescent at the extremity; the internal lobe membranous. Mandibles short, membranous internally. Eyes somewhat prominent. Antennæ rather long, slender, filiform or gradually increasing towards the extremity; joints 1-3 generally rather longer than the others. Prothorax convex, truncate at the base, narrowed anteriorly; the anterior angles acute. Elytra with the external apical angles straight. Abdomen not margined laterally, strongly narrowed behind. Mesosternum carinate. Legs with the anterior femora and tibiæ destitute of pubescence; the femora ciliate at the extremity; the tibiæ of the intermediate and posterior legs fringed throughout their length; tarsi 5:5:5, the first four joints gradually decreasing, those of the intermediate and posterior legs being long and glabrous.

The sexual characters are the same as those of *Tachyporus.*

Although more recent in point of date I have adopted Kraatz's name for these insects as *Conurus* is in use for a genus of birds.

90. CONOSOMA AUSTRALE.

Conurus australis, Erichson, Gen. Staph p. 221 (1840).; Fauvel, Ann. Mus. Genov. X., p. 279 (1877).

Niger, fusco pubescens, antennis basi apiceque testaceis, pedibus rubris, elytris thorace tertia parte longioribus; habitu omnino *pubescentis*, at paulo major, praecipue latior, antennis brevioribus et debilioribus magis fuscis, thoracis angulis posticis magis proeminentibus, elytris apice oblique truncatis, abdomine fortius pilosello distinctus; *C. littoreo* aequalis, sed multo convexior, niger, subnitidus, pube brevi, depressa, fusca, subsericante vestitus; ♂ segmento 7.° supra apice rotundato, subtus triangulariter exciso; tarsis anticis articulis 3 primis modice dilatatis; ♀ segmento 7.° supra quadrifido, laciniis intermediis ad segmenti medium usque divisis, subtus apice obtuse acuminato, setis rigidis ferrugineis dense ciliato. Long. 4½ mm. (*Fvl.*)

Port Frederick, Lottah, Gould's Country, Hobart, Tasmania; Melbourne, Victoria.

91. CONOSOMA RUFIPALPE.

Conurus rufipalpis, Macleay, Trans. Ent. Soc. N. S. Wales, II., p. 136 (1871)—*Conurus stigmalis*, Fauvel, Ann. Mus. Genov. X., p. 280 (1877).

Moderately elongate, convex, dark piceous, shining, sparingly clothed with grey pubescence; mouth-parts, legs, and antennæ reddish testaceous, the latter with the first two and terminal joints paler than the others.

Head broadly transverse, extremely finely and sparingly punctured. Antennæ moderately long, very slightly thickened towards the apex, joints 1-2 moderately elongate, 3, 4, and 5 equal, rather long, the 6th to 10th gradually decreasing, terminal joint oblong and acuminate. Prothorax moderately narrowed in front, extremely finely and closely punctured; the anterior margin very slightly projecting in the middle; the sides moderately arcuate; posterior margin nearly straight. Elytra considerably longer than the prothorax, very finely and rather closely punctured, with an oblique reddish testaceous marking on each side at the base. Abdomen very finely and rather closely punctured, narrowly margined with reddish testaceous. Legs reddish testaceous. Length 3½-4 mm.

Gayndah, Wide Bay, Queensland; Upper Hunter, Yass, Parramatta, Sydney, Wagga Wagga, New South Wales; Melbourne, Victoria; South Australia.

In some specimens the whole of the base of the prothorax and the abdomen are reddish testaceous and others have the body wholly piceous: between these two extremes every intermediate variety is found.

The form described under the name *Conurus stigmalis* is too briefly characterized to permit of certain identification, but I think it probable that it is identical with *Conosoma rufipalpe*, which was erroneously referred to the genus *Cilea* by Fauvel.

92. CONOSOMA ACTIVUM, sp. n.

Elongate, rather convex, dark piceous, shining, sparingly pubescent; elytra with longitudinal testaceous marking on each side near the suture; antennæ, mouth-parts, and legs reddish testaceous.

Allied to *C. rufipalpe* which it resembles in form, but differing in the following particulars: the antennæ are a trifle longer and are darker in colour, there being no difference in the colour of the basal and terminal joints; the prothorax is slightly more convex; and the elytra are provided on each side near the suture with a rather broad longitudinal marking which extends from the base to just before the posterior margin. The whole body is also somewhat narrower. Length 3½ mm.

Mount Romney, Hobart, Tasmania.

Although the preceding species is variable in colour I do not think it can be made to include the above form as it differs not only in the extent, but also in the position of the testaceous markings. Both *Conosoma rufipalpe* and *C. activum* are allied to *C. australe.*

93. CONOSOMA IMPENNE.

Conurus impennis, Fauvel, Ann. Mus. Genov. XIII., p. 564 (1878).

Praecedente [*rufipalpe*] paulo minor, praesertim longior et augustior, paulo fortius minus crebre punctatus, longius fulvo pubescens, colore toto castaneo-rufo, palpis, antennarum picearum basi, articulo 11.° apice tarsisque testaceis, antennis multo brevioribus, articulis 6-7 sequentibus vix longioribus, thorace multo minore et angusto, antice minus augustato, basi arcuato, angulis posticis porrectis, maxime acutis, elytris parallelis, thorace angustioribus, tertia fere parte brevioribus, abdomine parce brevius nigro piloso, segmentis rufo marginatis. Long. 4⅔ mm. (*Fvl.*)

King George's Sound, West Australia.

94. CONOSOMA TRIANGULUM.

Conurus triangulum, Fauvel, Ann. Mus. Genov. XIII., p. 565 (1878).

Magnitudine et facie quadam *Tachypori formosi*, colore et punctura praesertim distinguendus; praecedentibus brevius conicus, nitidulus, convexus, parcius fusco pubescens, dilute piceus, palpis, antennarum articulis 3 primis, 11.° apice tarsisque testaceis; thorace,

elytris sutura et tertia parte apicali a scutello arcuatim, segmentis 2, 5-7, pedibusque plus minusve rufis; segmento 2.° pube aurea; punctura thoracis parciore, vix perspicue aspera, elytrorum abdominisque sat densa et fortiore, segmentis 6-7 laevioribus; antennis brevibus, crassis, articulis 7-8 quadratis, 9-10 parum transversis; thorace subsemicirculari, transverso, antice fortiter arcuatim angustato, angulis posticis recte truncatis, licet obtusis; elytris circa apicem parum angustatis, thorace vix latioribus, paulo longioribus; abdomine brevius conico. Long. 3-4 mm. (*Fvl.*)

Victoria; Adelaide, South Australia; King George's Sound, West Australia.

95. CONOSOMA FUMATUM.

Conurus fumatus, Erichson, Gen. Staph. p. 228 (1840); Fauvel, Ann. Mus. Genov. X., p. 280 (1877),

Fuscus, nitidus, fulvescenti-pubescens, antennarum basi pedibusque testaceis, thorace limbo rufescente, elytris thorace longioribus; statura intermedius quasi inter *C. pubescentem* et *immaculatum* (*fusculum*); utrique affinis, ab utroque autem pube minus subtili et thoracis angulis posticis haud prominulis satis distinctus; ♂ segmento 7.° supra apice rotundato, subtus sat fortiter triangulariter exciso, tarsis anticis articulis 3 primis leviter dilatatis. Long. 3⅓ mm. (*Fvl.*)

Tasmania.

96. CONOSOMA ELONGATULUM.

Conurus elongatulus, Macleay, Trans. Ent. Soc. N. S. Wales, II., p. 136 (1871).

Elongate, much narrowed behind, dark piceous, shining, sparingly clothed with fine grey pubescence; prothorax narrowly margined with dark reddish testaceous at the base; antennæ and legs reddish testaceous.

Head transverse, scarcely perceptibly and not very closely punctured. Antennæ rather long, thickened towards the extremity, the first three and the apical joints somewhat paler than the others; basal joint very elongate, joints 2-6 of nearly equal lengths and elongate, 7th to 10th much shorter, only slightly longer than broad, the apical joint short and acuminate at the extremity.

Prothorax slightly transverse, considerably narrowed in front, extremely finely and rather closely punctured; sides rather strongly arcuate. Elytra about as long as the prothorax, distinctly narrowed behind, extremely finely and rather closely punctured. Abdomen greatly narrowed behind, very finely and moderately closely punctured. Legs reddish testaceous. Length 4½ mm.

Gayndah, Queensland.

97. CONOSOMA PHOXUM, sp. n.

Elongate, greatly narrowed behind, reddish testaceous, somewhat shining, the sides of the elytra and the abdomen almost piceous, finely and moderately closely pubescent; antennæ and legs pale reddish testaceous, the former with the first four joints elongate.

Head transverse, very finely and sparingly punctured. Antennæ rather long, slightly thickened towards the apex, the first four joints elongate, the 5th to 10th gradually decreasing in length, the terminal joint acuminate at the extremity. Prothorax transverse, much narrower in front than behind, extremely finely and moderately closely punctured; sides strongly arcuate. Elytra rather longer than the prothorax, narrowed behind, extremely finely and not very closely punctured, with the sides inclining to piceous. Abdomen piceous, strongly narrowed posteriorly, very finely punctured, the posterior margin of the 5th and 6th and the whole of the 7th segment dark reddish testaceous. Legs reddish testaceous. Length 4¾ mm.

Adelaide, South Australia.

Allied to the preceding species.

98. CONOSOMA AMBIGUUM, sp. n.

Elongate, much narrowed posteriorly, piceous, somewhat shining, finely pubescent; the prothorax, the inner apical angles of the elytra, the posterior margin of the 5th, and the whole of the two following abdominal segments reddish testaceous; antennæ and legs reddish testaceous.

Head transverse, very finely and sparingly punctured. Antennæ rather short, thickened towards the extremity, the first three joints slightly elongate, the following ones shorter, only a little longer than broad, the apical joint short and acuminate. Prothorax transverse, narrowed in front, very finely and not very closely punctured; sides gradually arcuate. Elytra about as long as the prothorax, narrowed behind, finely and rather closely aciculate-punctate; the posterior margin of each elytron oblique, the inner angles reddish testaceous; the suture slightly raised. Abdomen strongly narrowed posteriorly, finely and moderately closely punctured, the posterior margin of the 5th and the whole of the 6th and 7th segments reddish testaceous. Legs reddish testaceous. Length 4⅓ mm.

Adelaide, South Australia.

A very distinct species.

99. CONOSOMA ATRICEPS.

Conurus atriceps, Macleay, Trans. Ent. Soc. N. S. Wales, II., p. 136 (1871).

Rather robust, convex, dark piceous, shining, very finely and sparingly pubescent; prothorax rather bright reddish testaceous; elytra dark reddish testaceous, the base near the scutellum and the sides piceous.

Head strongly transverse, extremely finely and very sparingly punctured. Antennæ fuscous, rather short, slightly incrassate; the first three joints elongate and testaceous, joints 4-10 very short, transverse, terminal joint moderately long, acuminate and testaceous. Prothorax broadly transverse, narrowed in front, almost imperceptibly and very sparingly punctured; anterior margin straight; the sides gradually arcuate. Elytra longer than the prothorax, reddish testaceous, rather darker than the prothorax, extremely finely and sparingly punctured; with an obscure marking in the middle at the base and the sides piceous. Abdomen piceous, moderately strongly and closely punctured, the pubescence fine but distinct; margins of the segments and the whole of the terminal segment obscure reddish testaceous. Legs reddish testaceous. Length 3 mm.

Gayndah, Queensland.

100. CONOSOMA EXIMIUM, sp. n.

Rather robust and convex, piceous, shining, finely and moderately closely pubescent; head and prothorax very dark reddish testaceous, the latter much paler at the posterior margin.

Head broadly transverse, finely and sparingly punctured. Antennæ rather short, fuscous, slightly thickened towards the extremity; the first three joints elongate and pale reddish testaceous, joints 7-10 slightly transverse, terminal joint moderately long, acuminate. Prothorax broadly transverse, narrowed in front, finely but distinctly and rather closely punctured, with the posterior margin narrowly margined with pale reddish testaceous; the sides gradually arcuate. Elytra longer than the prothorax, finely and moderately closely aciculate-punctate. Abdomen piceous, much narrowed posteriorly, finely and rather closely punctured, the posterior margins of all the segments inclining to reddish testaceous. Legs reddish testaceous. Length 2½-3½ mm.

Melbourne, Victoria; Nuriootpa, South Australia.

Very distinct from the preceding species by its much more closely and more strongly punctured prothorax and elytra, and by its more closely pubescent abdomen. It will also be seen that it differs in colour.

101. CONOSOMA ENIXUM, sp. n.

Short, moderately robust and convex, piceous, shining, finely and not closely pubescent; head dark reddish testaceous; prothorax rather bright reddish testaceous.

Head transverse, extremely finely and very sparingly punctured. Antennæ rather short, fuscous, somewhat thickened towards the extremity; the first three joints slightly elongate and reddish testaceous, 4th joint slightly longer than broad, 5th to 10th transverse, the apical joint short and acuminate. Prothorax broadly transverse, greatly narrowed in front, finely and not very closely punctured; the sides strongly arcuate. Elytra much longer than the prothorax, narrowed behind, rather finely and closely aciculate-punctate. Abdomen piceous, finely and closely punctured, the posterior margins of all the segments obscure testaceous. Legs reddish testaceous. Length 2½ mm.

Piper's Flats, Gunning, New South Wales; Hobart, Tasmania

This species is allied to *Conosoma eximium*, but differs, apart. from its colour, in having the elytra, which are more closely punctured, a trifle longer; the prothorax is less closely and rather more finely punctured.

102. CONOSOMA DISCUS.

Conurus discus, Fauvel, Ann. Mus. Genov. XIII., p. 565 (1878).

C. basali Er. sat vicinus, licet paulo minor, latior et brevior, aliter coloratus, niger, magis opacus, pube fusca brevique dense obtectus, thorace vix perspicue, elytris abdomineque crebre subtiliter punctatis; ore, antennis, thoracis angulo postico, segmentorum marginibus, ano pedibusque rufis; elytrorum macula semicirculari basi media communi obscure rufa; antennis robustis, brevissimis, articulis 6-7 fortiter transversis, 8-10 paulo longioribus; thorace amplo, brevissimo, duplo fere latiore quam longiore, antice fortiter arcuatim angustato, angulis posticis rotundatis; elytris thorace paulo longioribus, non latioribus, circa apicem paulo angustatis, lateribus longe trisetosis; abdominis praesertim segmenti secundi pube aureola. Long. 2 mm. (*Fvl.*)

Victoria.

103. CONOSOMA PERSONATUM.

Conurus personatus, Fauvel, Ann. Mus. Genov. XIII., p. 566 (1878).

Inter caeteros statura minutissima et colore maxime insignis; testaceus, sat nitidus, parce aureo pubescens, elytris abdomineque longe multi nigro pilosis; capite præter frontem brunneo; antennis præter articulos 1-2, 10-11 flavos, macula lacrymali utrinque thoracis basi, altera arcuata elytrorum apice suturam non attingente, punctisque 3, piceis, 1.° suturali, tertia parte anteriore, 2 aliis, utroque in elytri disco medio sitis; segmento 5.° medio apice submaculatim sextoque piceis, 7.° margine excepto, rufulo; antennis brevibus, crassis, articulo 5.° parum, 6-10 fortiter transversis; thorace vix perspicue, elytris crebre subtilissime, abdomine obsoletius punctatis; thorace sat transverso, antice arcuatim fortiter angustato, angulis posticis subrectis; elytris thorace paulo longioribus, a basi ad apicem sat fortiter angustatis. Long. $1\frac{1}{2}$ mm. (*Fvl.*)

Port Hacking, Sydney, New South Wales.

A very pretty and distinct species.

25. Tachyporus.

Gravenhorst, Col. Micr. p. 124 (1802); Lacordaire, Gen. Col. II. p. 54.

Mentum strongly transverse, truncate in front. Ligula membranous, large, bilobed; the lobes rounded, divergent, united with the paraglossæ. Maxillary palpi with the 2nd and 3rd joints subequal, the latter incrassate, the 4th small, subulate. Labial palpi 3-jointed, the 3rd much more slender than the first two. Maxillæ with the lobes corneous, nearly equal, pubescent at the extremity; the internal lobe membranous on the inner side. Mandibles short, armed on the inside with a narrow membranous fringe. Head transverse. Antennæ rather long, slender, filiform or slightly thickened towards their extremity; the first three or four joints longer than the others. Prothorax large, rather convex, narrowed in front, with the anterior angles acute. Elytra longer than the sternum, the external apical angles truncate or slightly produced. Abdomen finely margined, strongly narrowed behind. Mesosternum simple. Legs moderately long; the femora and the anterior tibiæ glabrous, the intermediate and posterior tibiæ rather strongly spinulose; tarsi 5:5:5, the anterior and intermediate elongate, with the first three joints gradually decreasing, pubescent below, the 4th joint very small.

The anterior tarsi are often more or less dilated, sometimes in both sexes, sometimes in the male only, but the most important sexual characters are afforded by the penultimate segment of the abdomen; in the male it is entire above and emarginate beneath, whereas in the female its dorsal side is quadrifid and its ventral entire and terminated by stiff hairs.

104. TACHYPORUS TRISTIS.

Tachyporus tristis, Macleay, Trans. Ent. Soc. N. S. Wales, II., p. 136 (1871).

Elongate, narrowed both in front and behind, dark piceous, somewhat shining, finely and moderately closely pubescent.

Head broadly transverse, finely and rather closely punctured. Antennæ reddish testaceous, thickened towards the apex; 1st and 2nd joints elongate, the 1st rather longer than the other, 4-10 very short, transverse, apical joint moderately long, acuminate at the extremity. Prothorax considerably narrowed in front, rather finely and closely punctured. Scutellum rounded behind, finely punctured. Elytra about as long as the prothorax, a little narrowed both in front and behind, finely and very closely aciculate-punctate. Abdomen finely and closely punctured. Legs reddish testaceous. Length 2¾ mm.

Gayndah, Queensland.

A single imperfect specimen.

105. TACHYPORUS VIGILANS, sp. n.

Rather robust, narrowed both in front and behind, slightly convex, dark piceous, shining, very finely and rather closely pubescent; antennæ with the first three joints reddish testaceous.

Head small, transverse, finely and closely punctured. Antennæ rather short, thickened towards the apex; the 1st and 2nd joints subequal, 3rd joint shorter, 4th to 10th transverse, gradually increasing in width, apical joint rather large. Prothorax broadly transverse, greatly narrowed in front, finely and rather closely punctured; the sides strongly arcuate. Elytra a little longer than the prothorax, slightly narrower in front than behind, finely, irregularly and closely aciculate-punctate; the posterior margin sinuate before the external angles which are slightly produced. Abdomen strongly narrowed behind, finely and rather closely punctured. Legs ferruginous, finely punctured. Length 2 mm.

Launceston, Tasmania.

Allied to the preceding species, but much shorter and more robust.

106. TACHYPORUS RUBRICOLLIS.

Tachyporus rubricollis, Macleay, Trans. Ent. Soc. N. S. Wales, II., p. 137 (1871).

Elongate, narrowed both in front and behind, reddish testaceous, finely and not very closely pubescent, elytra darker in colour, inclining to piceous; abdomen piceous.

Head small, transverse, finely and very sparingly punctured. Antennæ reddish testaceous, rather short, thickened towards the extremity; basal joint elongate; 4-10 transverse. Prothorax transverse, rather strongly narrowed in front, finely and not very closely punctured; sides regularly and not very strongly arcuate. Elytra about as long as the prothorax, slightly narrower in front than behind, finely, irregularly and not very closely punctured; sides arcuately rounded; posterior margin slightly sinuate before the external angles which are slightly produced. Abdomen strongly narrowed posteriorly, finely and moderately closely punctured. Legs reddish testaceous. Length 2 mm.

Gayndah, Queensland.

26. CILEA.

Jacq. Duv. Gen. Staph. p. 25—*Erchomus*, Motschulsky, Bull. Mosc. III., p. 218 (1858).

Body short, convex. Ligula short, bilobed. Maxillary palpi with the 2nd and 3rd joints sub-equal, the 4th acuminate. Labial palpi with the 3rd joint narrow, elongate. Head sunk in the prothorax. Antennæ filiform or thickened towards the extremity. Scutellum large. Elytra glabrous, without a sutural stria. Abdomen margined. Mesosternum carinate. Legs moderately long; tibiæ armed with small spines; tarsi 5:5:5, the posterior with the first joint as long or longer than the three following joints taken together.

107. CILEA LAMPRA, sp. n.

Robust, moderately convex, dark piceous, shining, with distinct purple reflections; prothorax narrowly margined with testaceous; elytra with a large oblique testaceous marking on the disc, antennæ and legs reddish testaceous.

Head broadly transverse, nearly impunctate. Antennæ moderately long, very slightly thickened towards the extremity; joints 1-3 somewhat elongate, nearly equal in length, 4th to 6th slightly decreasing in length, 7th to 10th nearly equal, apical joint rather long, acuminate. Prothorax broadly transverse, narrowed anteriorly, scarcely perceptibly and very sparingly punctured; the sides gradually and not very strongly arcuate. Scutellum small, rounded behind, impunctate. Elytra considerably longer than the prothorax, a little narrowed both in front and behind, impunctate and shining, with distinct purplish reflections: each elytron with a large oblique testaceous marking extending from near the humeral angle to beyond the middle of the suture; posterior margin rounded, the internal angles obtuse, the external rounded. Abdomen broad, piceous, extremely finely punctured. Legs reddish testaceous. Length 2-2½ mm.

Ipswich, Queensland; Tarcuttah, New South Wales.

108. CILEA DISCIPENNIS.

Cilea discipennis, Fauvel, Ann. Mus. Genov. XIII., p. 563 (1878).

Colore in genere unica, latiuscula, subconvexa, nitidissima, vix sericea, elytris omnium obsoletissime, abdomine creberrime subtilissime punctulatis; nigra, palpis antennarumque articulo ultimo apice flavis, antennarum basi, thoracis lateribus late, basi angustissime, elytrorum margine vix, plaga oblonga disco obliqua postice suturae conjuncta, segmentorum marginibus pedibusque rufis; antennis caeterum piceis, sat elongatis, parum incrassatis, articulis 3-5 subaequalibus, 6-10 sensim latioribus et brevioribus, 9-10 quadratis, 11.° latiusculo; thorace basi capite duplo circiter latiore, a basi ad apicem arcuatim sat fortiter angustato, angulis posticis obtuse rotundatis; elytris medio thorace vix latioribus, antice posticeque aeque parum angustatis, hoc vix longioribus, sat transversis, angulis posticis rotundatis, utrinque anguste depresso-marginatis; ♂ segmento 7.° supra triangulariter quadriinciso, dentibus externis paulo brevioribus; ♀ profunde quadrifido, spinis aequalibus, longis, acutis. Long. 2½-2⅔ mm. (*Fvl.*)

Sydney, New South Wales; Adelaide, South Australia.

27. TACHINUS.

Gravenhorst, Col. Micr. p. 135 (1802); Lacordaire, Gen. Col. II., p. 55.

Mentum transverse, truncate in front. Ligula similar to that of Tachyporus, but the lobes more divided. Paraglossæ about as long as ligula. Maxillary palpi filiform, moderately long, 2nd joint a little longer than the 3rd, the 4th slightly longer than the 3rd, acuminate. Labial palpi filiform, 3-jointed, the second joint shorter than the two others. Mandibles, head and antennæ like those of Tachyporus. Antennæ filiform, slightly thickened towards the extremity, terminal joint ovate. Prothorax transverse, narrowed in front, truncate or strongly bi-sinuate at the base, emarginate in front, posterior angles sometimes projecting behind, the anterior angles slightly acute. Elytra longer than the prothorax. Scutellum rounded. Abdomen margined, with the 2nd ventral segment raised in middle. Legs rather short; tibiæ armed with small spines; tarsi 5:5:5, moderately long, the first four joints gradually decreasing in length.

Anterior tarsi sometimes simple in both sexes, sometimes dilated in the male. Penultimate segment of the abdomen in some species quadrifid above, and cleft below, in the male, quadrifid above and below in the female; in other species the segment is quadri-dentate above, and deeply emarginate below, in the male, and presenting three or four divisions above, and six below, in the female.

109. TACHINUS MARGINELLUS.

Staphylinus marginellus, Fabricius, Spec. Ins. I., p. 337—*Tachinus marginellus*, Erichson, Gen. Staph. p. 263 (1840); Kraatz, Nat. Ins. p. 412.

Oblong, narrowed both in front and behind, moderately convex, dark piceous, shining; prothorax narrowly margined with testaceous; a narrow streak along the outer margin of each elytron and the posterior margin also testaceous; legs and base of antennæ reddish testaceous.

Head finely and closely punctured. Prothorax broadly transverse, finely and closely punctured. Elytra more strongly and closely punctured than the prothorax, the marginal streak tolerably distinct and extending throughout the whole length of the elytra. Abdomen finely and rather closely punctured; penultimate segment in female with the outer pair of teeth stronger and longer than the inner. Length 4 mm.

Rose Bay, Sydney, New South Wales.

I obtained a single specimen agreeing in every respect with this common European species from beneath dead leaves during the present month (October). The species is probably introduced.

28. LEUCOCRASPEDUM.

Kraatz, Wiegm. Archiv, XXV., p. 51 (1859)—*Euryglossa*, Motschulsky, Etud. Ent. p. 84 (1859).

Ligula entire. Maxillary palpi subfiliform, 3rd joint a little longer and narrower than the 2nd, 4th nearly one-half narrower than the preceding joint. Labial palpi 2-jointed, the 1st joint very elongate, the 2nd subulate. Maxilla moderately long, membranous; internal lobe hooked at the extremity, armed with small spines; external lobe ciliate at the apex, inner margin denticulate near the base. Mandibles small. Head concealed, transverse, slightly convex in front. Antennæ filiform, 2nd joint larger than the 1st, 3rd much shorter and narrower than the preceding, 10th slightly transverse. Legs rather long; tibiæ unarmed; tarsi 5:5:5, elongate, the 1st joint of the posterior pair almost as long as the three following joints together.

Separated from all the other Australian genera by having the head concealed beneath the prothorax.

110. LEUCOCRASPEDUM SIDNEIENSE.

Leucocraspedum sidneense, Fauvel, Ann. Mus. Genov. X., p. 281 (1877).

Cæteris postice minus acuminatum, sat convexum, nigrum, parum nitidum, pube subtili grisea sat dense, abdomine longius, vestitum; antennis basi late, palpis pedibusque rufo-testaceis, femoribus plus minusve infuscatis, thoracis lateribus anoque piceis; antennis brevibus, incrassatis, articulis 6-7 subquadratis, 8-10 parum transversis, 11.° magno, oblongo; capite thoraceque non perspicue, elytris dense subtiliter vix rugosule, abdomine vix subtilius aequaliter punctatis; thorace subsemicirculari, convexo, fortiter transverso, antice maxime attenuato, basi utrinque profunde sinuato, angulis posticis proeminentibus, subrectis; elytris convexis, basi thoracis latitudine et longitudine, apice vix angustioribus, parum transversis; abdomine circa apicem attenuato; ♂ segmento 7.° supra apice ciliato, leviter emarginato, subtus integro. Long. 2-2¾ mm. (*Fvl.*)

Sydney, New South Wales.

Tribe 2. BOLITOBIINA.

Antennæ eleven-jointed. Head margined. Tarsi five-jointed, first joint of posterior pair moderate or short.

29. BOLITOBIUS.

Stephens, Ill. Brit. Ent. V., p. 171 (1832); Lacordaire, Gen. Col. II., p. 57.

Mentum very short, membranous in front. Ligula rather long, rounded in front, very slightly emarginate in the middle. Paraglossæ short. Maxillary palpi with the last three joints equal or subequal, sometimes cylindrical, sometimes acuminate at the extremity. Labial palpi 3-jointed, the first two subequal, the 3rd a little longer, obtuse at the apex. Maxillæ with the lobes ciliate Mandibles provided with an internal membrane which is ciliate at the base. Antennæ rather long, filiform, slightly thickened towards the extremity, the joints, except the last, obconical; the 1st and 3rd joints longer than the others. Prothorax subtransverse, projecting slightly over the base of the elytra; the anterior angles depressed. Elytra a little longer than the prothorax, truncate behind. Abdomen margined, gradually and strongly narrowed behind. Mesosternum slightly carinate. Legs slender, rather long; intermediate coxæ subcontiguous; posterior femora large; tibiæ spined; tarsi 5:5:5, rather long, the first joint of the four posterior tarsi elongate.

The elongate form, short elytra, and large size of the posterior femora will serve to distinguish this genus from *Tachyporus* and *Tachinus*.

The species live chiefly in fungi, especially in the Boleti and larger varieties, but they are sometimes obtained in moss, &c.

111. BOLITOBIUS FAUVELI, sp. n.

Elongate, moderately convex, strongly narrowed both in front and behind, reddish testaceous, shining, sparingly clothed with long pubescence; antennæ dark piceous; the apical two-thirds of the elytra and the last two abdominal segments black.

Head transverse, rather short, moderately convex, very sparingly and extremely finely punctured. Antennæ rather robust, distinctly thickened towards the extremity; the first two joints narrow and reddish testaceous, the others piceous and much broader, the apical joint moderately large. Prothorax slightly broader than long, considerably narrowed in front, scarcely perceptibly punctured; anterior angles strongly rounded; the sides regularly arcuate; posterior angles slightly obtuse. Scutellum small, triangular, impunctate and shining. Elytra about as long as the head and prothorax together, slightly narrower in front than behind; humeral angles rounded; sides finely margined; posterior margin obliquely truncate, slightly sinuate before the external apical angles which are slightly obtuse; each elytron with an impressed row of fine setigerous punctures near the suture and another similar row near the side; in the sutural row there are about twelve, and in the other about ten punctures. Abdomen strongly narrowed behind, moderately strongly and closely punctured, finely and rather closely pubescent; the sides furnished with rather long black setæ. Legs reddish testaceous. Length 5 mm.

Sydney, New South Wales.

This species, which represents a genus not hitherto recorded from Australia, is dedicated to M. Albert Fauvel, who has done so much towards elucidating the family of Coleoptera to which it belongs.

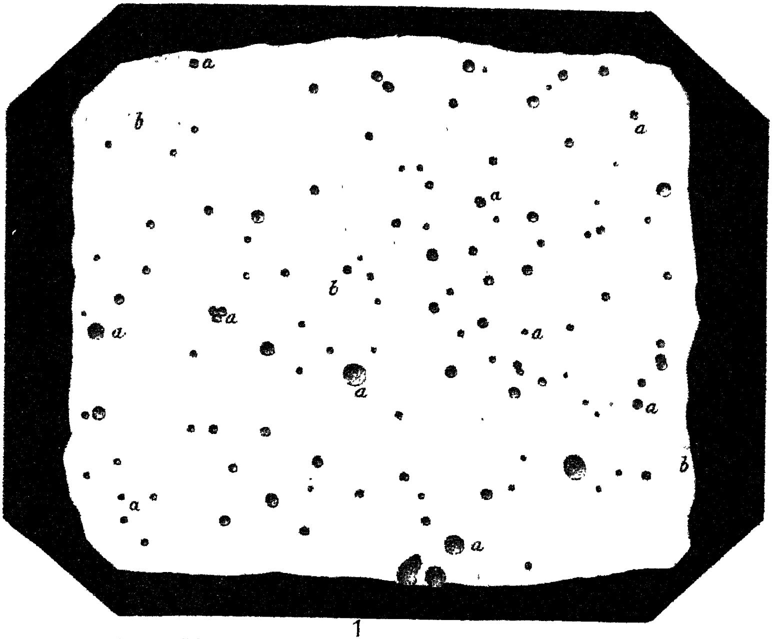
112. BOLITOBIUS SHARPI, sp. n.

Elongate, rather convex, strongly narrowed both in front and behind, very sparingly pubescent; head and prothorax dark reddish testaceous; elytra and abdominal segments black.

Head transverse, short, rather strongly convex, sparingly and extremely finely punctured. Antennæ moderately robust, thickened towards the apex; the first two joints reddish testaceous, the others piceous. Prothorax broader than long, strongly narrowed in front, extremely finely and very sparingly punctured; anterior angles strongly rounded; the sides arcuately rounded; posterior angles slightly obtuse. Scutellum small, rounded behind, impunctate and shining. Elytra longer than the head and prothorax together, slightly narrower in front than behind; humeral angles rounded; sides margined; posterior margin obliquely truncate, sinuate before the external angles which are very slightly produced: each elytron with two impressed rows of about thirteen punctures, one near the suture and the other near the side. Abdomen strongly narrowed behind, rather strongly and closely punctured, finely and moderately closely pubescent; the sides furnished with a few long black setæ. Legs reddish testaceous. Length 6 mm.

Sydney, New South Wales.

Apart from its colour this very distinct species may be distinguished from *Bolitobius Fauveli* by its longer and more convex prothorax, more parallel-sided highly polished elytra, and by its less closely pubescent abdomen. It is dedicated to Dr. David Sharp.



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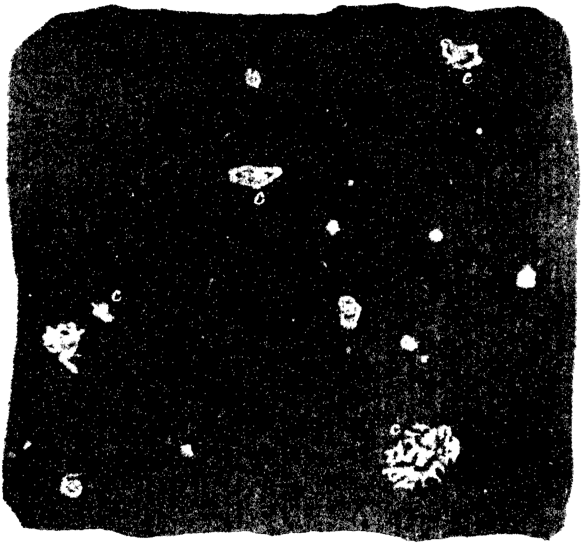

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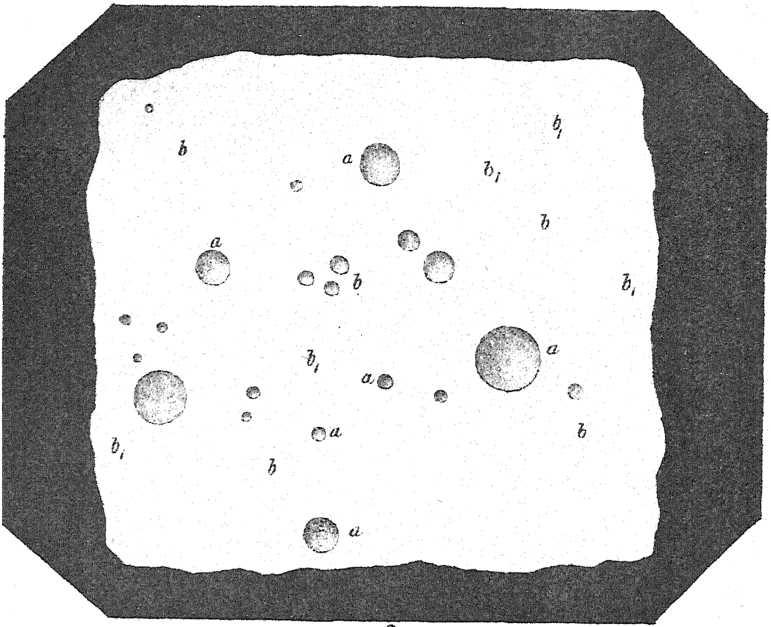
O. K. del.

S. Sedgfield lith.



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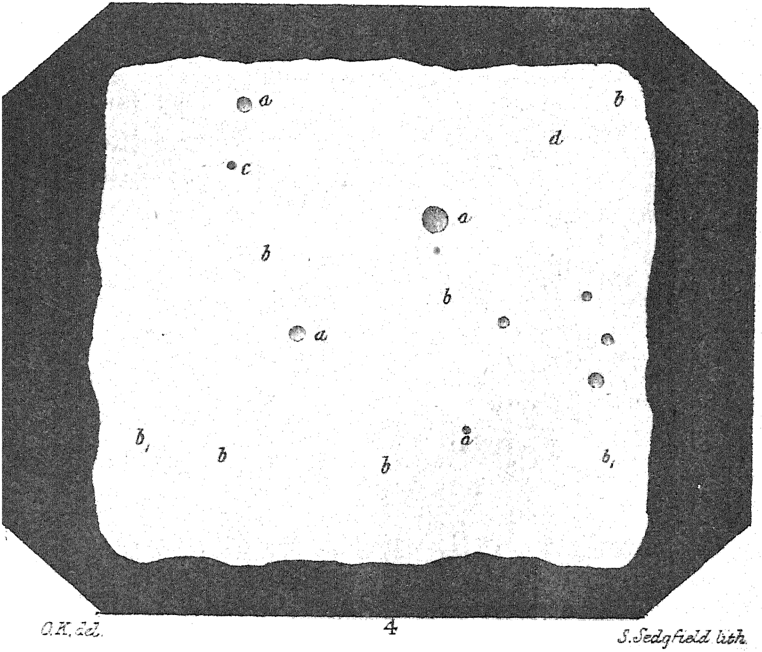

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S. Sedgfield lith.

NOTES ON THE BACTERIOLOGICAL EXAMINATION OF WATER FROM THE SYDNEY SUPPLY. No. I.

By Oscar Katz, Ph.D., M.A.

(Plates X. and XI.)

(Introductory.)

When, some time ago, through the generous and ever-ready assistance of the Hon. William Macleay, who not only defrayed the cost of the necessary working-apparatus, but also encouraged me in my pursuits in every possible way, and to whom I take this opportunity of tendering my best thanks, I was fortunate enough to commence to do some bacteriological work in the laboratory at the Linnean Hall, Sydney, I fancied that, among other interesting subjects, the Sydney water, as used for drinking and other purposes, might be worth a biological or more especially a bacteriological examination.

It is well-known that bacteria or Schizomycetes (fission-or cleft-fungi) occur in most natural waters, and also, that these very micro-organisms are possessed of very marked physiological properties, which manifest themselves in different ways, as processes of oxidation and hydratation, of fermentation and putrefaction, according to the chemical changes which they bring about in various substances. Last but not least, a pretty fair number of bacteria claim a more than usual interest, inasmuch as they are indubitably proved to be intimately connected with the production of certain, so-called infectious diseases in man, animals, and, to some extent in the vegetable world, while in other such diseases the existence of the real contagium in the form of a micro-organism, has not yet been clearly demonstrated, but can only be inferred.

Representatives of all these groups of bacteria may be contained in or transported by drinking-water, which, on account of its being a liquid, constitutes an admirable vehicle for them.

Some importance, therefore, ought always to be attached to the testing of potable waters for bacteria, more especially since plain and convenient, and at the same time, satisfactory methods of research are now at our disposal. In cases and at times of epidemics especially, for instance of typhoid fever, such inquiries are undoubtedly extremely useful, as they may supply us with facts, otherwise scarcely or not attainable.

The water which formed the subject of the present examination was pipe-water from the Sydney supply, and was derived, in nearly all cases, from the tap in the laboratory at the Linnean Hall; one sample only was obtained from a tap in Mr. Macleay's house.

The remarks made in this paper on the condition of that water as regards the bacteria found in it, do not by any means pretend to be exhaustive; they are, in fact, but the results of some observations briefly relating to the quantity, and some characteristic features of the micro-organisms hitherto obtained, and they will in time, I hope, be followed by data of a more comprehensive nature.

METHODS OF EXAMINATION.

In examining the water under consideration I employed Koch's method, with which I had ample opportunity of making myself acquainted in Germany during the year 1885. The principle which underlies this method, and in which it so materially differs from all other methods relative to the same subject—I shall do well to state that here in a few words—consists in the application of a solid and at the same time transparent, nutrient soil for the cultivation of vegetable micro-organisms in their pure state, *i. e.* not mixed with foreign elements. In this respect, the most universal cultivating medium, as used by the school of Koch, is a 5%-10% meat-broth-peptone-gelatine, or shortly nutrient gelatine, which is still solid at a temperature of 25° C. (77° F.) This nutritive gelatine—I need scarcely say here that [in conducting pure cultures a thorough sterility of all substances and apparatus used, is a *conditio sine* *qua non*—in a liquid state, and having a temperature at any rate not higher than blood-heat, is mixed with whatever it is desired to test for micro-organisms. In our case, a definite quantity of water is well distributed in a certain quantity of nutrient gelatine in a test-tube, and the still liquid mixture is then, with the adoption of due precautions, of course, transferred to and spread on sterilised glass-plates, which, after sufficient solidification of the layer of gelatine has taken place, are placed in a convenient form of damp chamber, and therein subjected to temperatures not exceeding 25° C. (77° F.), for a certain period. The great advantages of this mode of carrying on bateriological examinations are, in the main :—

(1.) The *modus operandi* is extremely simple and free from the concomitant complications of other methods regarding bacteriology.

(2.) The whole of the germs in the sample of water, or whatever it may be operated upon in the described manner, are deposited all at once on the culture-plates ; they become, each of them, fixed to a separate spot in or on the solidifying gelatine. Here those capable of development in the gelatine—most of the Schizomycetes are—go to form groups or colonies which are not all alike, but according to the specifically different germs from which they originate, differ from one another, generally even to the naked eye. In these colonies or vegetations the bacterial species are distinguishable from one another, just in the same way as "a number of birds in their flights, or socially living ants in their wanderings."

(3.) From these colonies inoculations on or into various nutritive media for the purpose of obtaining pure cultivations, can be easily and successfully carried out.

On the other hand, Koch's method of gelatine-plate-cultivation for the bacteriological investigation of water, is not altogether devoid of some sources of error, which seem to be mainly these :—

(1.) There are a few groups of bacteria which refuse to grow at all in nutrient gelatine, or, at least, within the limits of temperature for solid gelatine. Parasitic species especially, *e.g. Bacillus tuberculosis* (Koch), will not be found to multiply under this treatment, nor will the forms which are grouped together under the name of Spirobacteria (Spirillum, Spirochaete). Then again, exclusively anaerobic bacteria, such as the bacillus of butyric acid fermentation, and the bacillus of malignant œdema, will not, at least under ordinary circumstances, develop in nutrient gelatine.

These groups, however, it must be admitted, form only a small part of the whole class of bacteria; yet it would be very important, at any rate, to have in the gelatine-plate process a means for their detection. By far the greater majority of bacteria, as already mentioned, grow readily in or on the common nutrient gelatine, Koch's comma-bacillus of cholera asiatica, and the bacillus of typhoid fever (Eberth) can, if present in the water under examination, scarcely escape notice. (*)

(2.) It is not always justifiable to regard the number of bacterial colonies met with on the plates of gelatine as corresponding exactly to as many individual germs in the sample of water under consideration. Bacteria, as is well known, have a tendency to form various kinds of aggregations, or to combine in groups of growth which are not always so easily separable into their individual components. Therefore, as von Malapert-Neufville proposes (†) the best way to say is :—

One cubic-centimeter of the water used
in the experiment a, yielded A bacterial colonies.
" " b, " B " "
and so on.

A few other objections to Koch's method of water-test are but of a slight and immaterial character; they can be satisfactorily met by paying the strictest care and attention to the prescribed course and manner of manipulation.

Before examining the water which, as already stated above, was derived from a tap in the Linnean Hall, and once only from one in

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(*) Conf. also Robert Freiherr von Malapert-Neufville, "Bacteriolog. Untersuchung d. wichtigsten Quellen d. städtischen Wasserleitung Wiesbadens und einer Anzahl Mineral-Quellen" . . . . . Zeitschrift f. Analytische Chemie von Fresenius, Jahrg. 25, Heft. 1, Wiesbaden 1886, pp. 39-88.

(†) Loc. cit.

Mr. Macleay's house, it was always allowed to run to waste for some time, after which about 50 cubic centimeters of it were collected in sterilised, small so-called Erlenmeyer's or parting flasks of about 130 ccm. capacity. Immediately after that procedure plate-cultivations were made, for which purpose mostly 1 ccm., besides that sometimes $\frac{1}{2}$ ccm. and $\frac{1}{4}$ ccm., of the samples of water were added to the gelatine kept in test-tubes.

As cultivation-plates I employ glass plates, about 11 cm. long, and 8 cm. broad, and a more satisfactory and convenient shape is arrived at by giving them the form of an octagon (Plates X, XI., fig. 1, 2, 3, 4). The damp chambers used by me consist of two flat glass-dishes of strong, white glass, with perpendicular walls. One of them measures 14-15 cm. inner diameter, and 6-6·5 cm. inner height or depth; it is destined for holding one or more of the culture-plates. The other, 15·5 cm. inner diam. and 3 cm. inner height or depth, is inverted and serves as cover for the former.

The incubator for low temperatures up to 25° C. (77° F.), in the laboratory, is made after a suitable design for such incubators; and, when necessary, the required temperature was kept up by means of a small kerosene-flame.

For plate-cultivations I employed a 10 % nutrient gelatine; for test-tube cultivations a 5%-6% gelatine (1). The microscopical examinations are made with a microscope by R. Winkel, Göttingen, Germany, having $\frac{1}{14}$ homogeneous immersion-objective, and condensing apparatus.

A direct microscopical examination of the samples under consideration was usually not made, for, however important such an examination might appear theoretically, yet its application is attended with such a variety of disadvantages that, after all, it cannot furnish precise results, and, therefore, cannot be of comparatively great value for the bacteriological analysis of water.

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(1) It was not possible for me to get in Sydney that variety of French gelatine which is recommended for the cultivation of Schizomycetes. So I took, from want of something better, a pretty good French gelatine (black and gold label; Coignet Père & Fils & Cie, Paris). As to the dry peptone, an essential although only small ingredient (1%) in nutrient gelatine, I was not able to obtain it here at all. I, therefore, had recourse to preparing as much as 1 oz myself; I employed it in a not quite dry state. A supply of it and of other material (especially gelatine) is now on its way to me from Germany.

NUMBER OF COLONIES OF BACTERIA.

In the following table I give a brief account of the number of bacterial colonies which made their appearance on the cultivation-plates, after a period of from two to three days' incubation, at a temperature of about 20° C. (68° F.) They are always calculated, in the now customary and conventional way for one cubic centimeter (1) of the samples under treatment. These figures have been arrived at by a series of single experiments, made on 14 different samples, within the space of about two months. This is indicated by the date when the sample had been taken. Moreover, I noted the temperature of the water operated upon, and besides the amount of bacterial colonies in general, I thought it well not to omit to state in a special column the number of those colonies which caused liquefaction of the gelatine. It is especially bacteria of this kind which induce fermentative and putrefactive processes in organic substances, although there are, on the other hand, important pathogenic species of bacteria, *e.g.*, the bacillus of typhoid fever (Eberth), which do not liquefy the nutrient gelatine in the least.

Date.	Temper. of Water.	Number of Colonies in 1 ccm.	Liquefying Colonies in 1 ccm.
(1) July 14 (?)	(?)	167	166 = 100 p.c.
(2) ,. 19	(?)	140	132 = $94\frac{2}{7}$ p.c.
(3) ,, 29	51° F. = $10\frac{5}{9}$°C.	69	24 = $34\frac{3}{4}$ p.c.
(4) Aug. 4	51 F. = $10\frac{5}{9}$ C.	2000	180 = 9 p.c.
(5) ,, 8	52 F. = $11\frac{1}{9}$ C.	1960	42 = $2\frac{1}{7}$ p.c.
(6) ,, 13	53 F. = $11\frac{2}{3}$ C.	500	174 = $34\frac{4}{5}$ p.c.
(7) ,, 18	$51\frac{1}{4}$ F. = $10\frac{2}{3}$ C.	520	334 = $64\frac{3}{13}$ p.c.
(8) ,, 23	51 F. = $10\frac{5}{9}$ C.	120	24 = 20 p.c.
(9) ,, 28	54 F. = $12\frac{2}{9}$ C.	35	6 = $17\frac{1}{7}$ p.c.
(10) Sept. 2	55 F. = $12\frac{7}{9}$ C.	23	0 = 0 p.c.
(11) ,, 7	60 F. = $15\frac{5}{9}$ C.	160	70 = $43\frac{3}{4}$ p.c.
(12) ,, 10	57 F. = $13\frac{8}{9}$ C.	38	4 = $10\frac{1}{2}$ p.c.
(13) ,, 16	59 F. = 15 C.	107	48 = $44\frac{7}{8}$ p.c.
(14) ,, 21	57 F. = $13\frac{8}{9}$ C.	51	3 = 6 p.c

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(1) 1 cubic centim. (ccm.) = ·060242 cub. inch.

These figures yield, out of the 14 single cases, an average number of 421 colonies in 1 ccm., and among these, 86 liquefying ones, equal to 20$\frac{3}{7}$ p.c.

From the above table it will be seen that we have, as regards the bacterial colonies, numbers before us which fluctuate within rather considerable limits. The maximum of colonies enumerated was 2000 on August 4th, the minimum 23 on September 2nd. On Aug. 8th, the likewise enormous number of 1960 was obtained; twice (Aug. 13th and 18th), 500 and 520 respectively. In five cases the numbers oscillate between 100 and 200, whereas in only five cases out of the whole were there less than 100 colonies.

The amount of bacterial life in a given sample of water is, under otherwise quite the same circumstances, greatly dependent on the amount of organic matter suspended in it. In other words: the more bacteria in the water, the greater the amount of organic matter in it. Now it is worth notice that the numbers 2000, 1960, 500, 520, as stated above, were obtained on days which succeeded a period of rather heavy rain. This rainfall carried or washed into the supply (dams) a certain quantity of organic detritus along with the accompanying micro-organisms, and, after a time, the consequences of this addition to the pipe-water made themselves evident by an enormous increase in the quantity of bacterial colonies. The water under examination then improved again vastly, as is well seen in all the remaining cases (see above).

From this also it follows that a general judgment of any water, with reference to its contained bacteria, cannot be arrived at by one single test, made on one or another day. Such an isolated experiment will give us nothing but a rough idea of the condition of the water for a limited time, and is not to be generalised. Even the above 14 individual cultivations have to be multiplied, in order to get more correct and reliable average numbers which would admit of even a general verdict.

As regards the relation between the quantity of bacteria present in a given water, and its quality from a sanitary point of view, as a potable water, Professor Koch says (1):—"A large number of micro-organisms indicates that the water has received admixtures in a state of decomposition and loaded with micro-organisms, impure tributaries, etc., which might contribute in addition to the many harmless bacteria, also pathogenic forms, that is, infectious matter. . . Experience thus far has shown that in good waters the number of germs capable of development varies between 10 and 150. As soon as the number considerably exceeds this limit, the water must be suspected of receiving contributions from polluted sources. If the number reaches or exceeds 1000 I should not permit its use as drinking water, at least not in time of a cholera epidemic. The number 1000 is chosen by me as arbitrarily as has been the case in selecting the limiting values in chemical analysis, and I allow each one to change it according to his convictions."

After these statements of Koch the particular tap-water of the Sydney supply—yielding an average number of 421 bacterial colonies in 1 ccm., for a period of little more than two months (see above)—cannot be declared as good.

DESCRIPTION OF THE BACTERIA.

In what follows I shall briefly describe the forms of bacteria hitherto obtained from the above-mentioned pipe-water. This description relates :—

(1). To the appearances of the bacteria under high powers of the microscope. The specimens are taken from colonies on the glass-plates, and examined both living and after having been stained with Loeffler's alkaline methyleneblue-solution.

(2). To the morphological features exhibited by the different species

(a). in their colonies on plates of gelatine, both with regard to their naked-eye appearances, and to those visible and demonstrable by the application of low powers of the microscope (70-122 diam.; transmitted light; [narrow diaphragm.])

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(1) The original text not being at hand, I quote a translation communicated in the "American Monthly Microscopical Journal." Vol. VII., Washington, April 1886, No. 4, p. 64.

(b). in their mode of growth in solid 5-6 % nutritive gelatine enclosed in test-tubes, or in other words, in the deportment of their pure cultivation in this nourishing soil and under these conditions.

(c). in their pure cultivation on an oblique surface of peptonised agar-agar broth or nutrient agar-agar (1) in test-tubes.

Five specifically different forms of bacteria as yet have been with certainty obtained from the water in question; they are described provisionally as Bacterium (Bacillus or whatever it may be) A, B, C, &c., adopting the plan of Malapert-Neufville. (2)

Of a few other bacteria the colonies of which from time to time appeared on the gelatine-plates, it is more than doubtful that they were contained in the samples of water employed. Firstly, they were met with in mostly one colony each, and only very seldom; secondly, they made their appearance after the plates, for the purpose of first examination, had already been in contact with the air of the room; lastly, they were found only at the surface of the gelatine. These colonies showed themselves to be very interesting, and I hope to return to them at the earliest opportunity.

BACILLUS A.

Microscopical Characters. Short rods of from ·0015-·0018 mm. (3) in length and about ·0008 in breadth; singly or in twos; extremities rounded; protoplasmic contents not thoroughly homogeneous, inasmuch as the ends of the rods stain with aniline-dye better than their central parts. With very active spontaneous movements which exhibit themselves as a tremulous hurrying across the field of the microscope, and are especially extremely vivid in the immediate neighbourhood of air-bubbles in a drop of water under the cover-glass (ærobic bacterial form.)

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(1) Agar-Agar, or Japanese isinglass, of good quality, is to be had in packets of about ¼ lb. at Chinese shops, George-street, Sydney. According to a label referring to a sample of such vegetable isinglass in the Technological Museum of Sydney, it is called "Kanten" "prepared by exposing the jelly obtained from *Gelidium corneum* (Lamarck) to the intense frost of a winter's night. It congeals and hardens and may then be kept for a great length of time." So far as I am informed there are more than this one species of seaweeds used for preparing Japanese isinglass or agar-agar. A nutrient agar-agar of 1 % withstands more than blood-temperature without becoming liquid, and is, on account of this property and from the fact that it is not to be liquefied by any bacterial growth, much used in bacteriological laboratories.

(2) Loc. cit.

(3) 1 mm. = ·03937 inch; ·001 mm. = ·0003937 inch.

On gelatine-plates. It forms at the surface of the gelatine greyish, turbid-looking colonies of circular circumference (Pls. X, XI, figs. 1, 3, 4, a), which exhibit, when examined with low magnifying powers, granular contents. The colonies enlarge very rapidly, liquefying at the same time and at the same rate the gelatine, effecting in the latter, at first, funnel-shaped, then with the advancing growth of the micro-organism, watch-glass-like excavations now filled with liquid matter. In the interior of the layer of gelatine the colonies multiply much more slowly than do the superficial ones.

When quite young—of from ·01-·12 mm. diam.—the colonies present, in optical section, more or less perfect circle-figures, with smooth outlines, as indicated by a bright, black, uninterrupted line, and showing a greyish colour. Contents of the vegetations homogeneous, slightly granular. In the larger ones signs of a commencing liquefaction of gelatine are visible.

In *nutrient gelatine* in a *test-tube* this bacillus displays a vigorous propagation which results in the production, in a proportionately short time, and along the track of the inoculating platinum wire, of an inverted conical bag of liquefied gelatine. The growth rapidly spreads itself in the gelatine, forming at the bottom of the conical-shaped or forefinger-like excavation of the latter a granular, rather dense deposit, whilst in the superincumbent liquid, which offers a turbid greyish appearance, small granules and particles are distributed. In course of time, the whole contents of the test-tube become one liquid mass.

On a sloping surface of *nutrient agar-agar* in a test-tube this bacillus readily grows laterally from the streak of the inoculation, and ultimately represents a greyish-white, shining, gelatinous, elongated, superficial layer, the edges of which are smooth and well defined, and thinner, and, therefore, more translucent than the other parts.

The culture of the above bacillus in or on the nutritive media here mentioned, did not cause any offensive smell.

With one or two exceptions, its colonies were always met with on the cultivation-plates sometimes in proportionately large, sometimes also in proportionately small numbers. It is the most common among the liquefying bacteria from the water.

BACILLUS B.

Microscopical Characters. Short rods, ·002 mm. long and about ·0007 mm. thick. Occur singly or in twos; motile; extremities rounded off.

On gelatine-plates. At the surface of the gelatine the micro-organism grows in gelatinous, glistening, compact, but easily separable patches, (Pl. XI, fig. 3, 4 b,) which, in reflected light, and viewed from above, have a bluish-grey, in transmitted light (especially if condensed), and viewed from the side, a beautifully bluish-opalescent colour. Contours or edges quite irregularly shaped (Pl. XI. fig. 3, 4. b,). In the centre of these masses, as a rule, one finds a small, somewhat elevated part, forming as it were, a sort of nucleus, from which the spreading of the vegetation takes place. Under a low magnifying power the contents of these colonies look finely granular, and are translucent with a light grey tint.

In the interior of the layer of the gelatine this bacillus is met with in characteristic lenticular, or Cyclas- Anodonta- and Unio-like colonies, which are very often placed edgewise or obliquely in the mass of gelatine. (Pl. X, fig. 1, b; pl. XI, fig. 3, 4, b). They are of a nearly white colour, and rather viscid consistency. Under low magnifying power, and if not too old, these interior colonies are of a greyish colour (transmitted light), having their contents finely granular and their contours smooth. In their optical section they sometimes strikingly resemble the long contour of lemons.

When quite young—I examined them ·01-·08 mm. in diameter—the colonies are, in optical section, circular, translucent, with a light-grey colour, and possessed of perfectly smooth, well defined outlines. Contents homogeneous, slightly granulate.

In *nutrient gelatine* in a *test-tube* this bacillus grows pretty slowly to a whitish solid thread of equal dimensions throughout all its length. The contents of this thread are not homogeneous inasmuch as it appears to be made up, notably at its edges, of great numbers of larger or smaller beads. At the surface of the gelatine the growth is more marked, extending centrifugally beyond the point of inoculation, and forming a shining, irregularly indented film or pellicle of a bluish-grey colour.

This micro-organism causes no liquefaction whatever of the gelatine, neither in test-tubes, nor on plates.

On an *oblique surface* of *nutrient agar-agar* it grows readily, and when exposed in an incubator at blood-temperature it multiplies considerably, within less than two days, to indistinctly greyish-white, jelly-like, superficial layers which suddenly cease to increase in size, and do not extend all over the free surface of the nutritive soil. On microscopical examination endogenous spore-formation was found to exist. This bacterium usually made its appearance on the cultivation plates, supplying, on the average, the largest contribution to the whole of the bacteria cultivated.

At first sight of the colonies and test-tube cultivations of this bacillus, I thought of the possibility of its being perhaps the bacillus of typhoid fever. The microscopical appearances, are however, against such a possibility. I have not yet finished cultivating it on potatoes at blood-temperature, nor have I hitherto made with it any inoculation experiments on animals. In addition to that it would be of paramount importance to have as standards of comparison, for this and other similar forms which might be detected in Sydney water or elsewhere, pure cultivations of the *Bacillus typhosus*. Such a pure culture, also of other pathogenic Schizomycetes, I expect daily from Professor Flügge, Director of the Hygienic Institution at Göttingen University, Germany.

BACILLUS C.

Microscopical Characters. Delicate, slender rods, of from ·0015—·0035 mm. in length, and about ·0004 mm. in width; with somewhat acutely rounded ends; occur usually in threads or filaments, made up of a great number of individual rods.

On *gelatine-plates.* Growing superficially it forms, at first, very thin, irregularly shaped, opalescent films, which, under a low magnifying power, show a mosaic-like arrangement of their contents. Later on, with the moderately quickly advancing growth of the colonies, liquefaction of the gelatine sets in, and at the bottom of the watch-glass-like excavation in the latter, now a liquid mass, there is seen a net-work of ochre-yellow, rather thick and short strings which, taken as a whole are longitudinal or circular in shape (Pl. X, fig. 2, c). These colonies spread themselves peripherally more and more, as more or less elongated threads, which are combined in more or less wide and elongated bundles, these being themselves in communication with one another in the most various ways.

In the interior of the gelatine the colonies have, from the very beginning, a yellowish colour.

When in quite a young stage of development (of from ·02-·2 mm. diam.) the colonies of this bacillus seldom represent, as a whole, a circular shape (optical section), but they are mostly irregularly circumscribed, with their contents slightly emarginate and partly provided with offshoots, often of the most curious and fantastic kind, in so far as they resemble root-fibres, legs of mites and insects, or the like. Contents of these colonies granular, translucent with a yellowish tint.

In *nutrient gelatine* in a *test-tube* this form grows in the shape of an inverted, elongated cone which, if looked at in transmitted light, offers a beautiful aspect inasmuch as a central axis representing the course of the inoculating platinum-wire, appears to be beset, all round, with an almost invisible, extremely fine and delicate, cotton-wool-like mass, of a cloudy appearance. The growth here proceeds but slowly. At the surface of the gelatine the micro-organism vegetates more quickly, liquefying the gelatine from above downwards, and forming at the bottom of the liquefied mass a dense ochre-yellow deposit.

On an *inclined surface* of *nutrient gelatine* in test-tubes it multiplies very readily, spreading laterally from the streak of the inoculation in a thin greyish-white film over the surface of the gelatine. On examination with a pocket-lens the edges of the growth are found to be lined with minute fringe-like processes, and, here and there, more or less elongated acuminate offshoots are seen which consist of an aggregation of minute, undulatory fibres, and are arranged, on each side, parallel to one another, running obliquely from below upwards, to the right and to the left respectively. The gelatine soon liquefies, first in a longitudinal, middle channel, carrying down with it to the bottom of the glass tube, the bacterial vegetation of these spots, and depositing it there as an orange-yellow dense flocky and rather tenacious mass. The liquefaction proceeds laterally till, after some time and at ordinary temperature, the test-tube is filled with one liquid mass. Besides the superficial growth, as observed in the gelatine-tube, of this bacillus, there exists, as long as the gelatine is solid, some inner vegetation, that is, from the gelatine-surface delicate, cloud-like, filamentous masses take their way into the solid gelatine in a parallel arrangement and in nearly a horizontal direction.

On a *sloping surface* of *nutrient agar-agar* this bacterium forms an ochre-yellow superficial layer with glistening even surface, and a narrow, thin, transparent, undulating border.

This species appeared now and then on the plates, but never copiously, fourteen colonies at one time being the largest number found (Pl. XI, fig. 2.)

BACILLUS D.

Microscopical Characters. Cylindrical, straight or sometimes slightly curved rods, of from ·004-·009 mm. in length, and about ·0017 mm. in width; occur singly, in twos, or in chains or filaments; extremities rounded off; with slow, seemingly pendulum-like, or slowly gliding, spontaneous movements; contents of the rods homogeneous.

On *gelatine-plates.* This bacillus came under notice only a few times, and in few colonies. There is in the gelatine a watch-glass-like excavation, with perfectly circular circumference, and filled with turbid, liquefied gelatine, in which the colony (Pl. XI, fig. 4, d) is seen to consist of a central part of peculiar flocky, or sponge-like contents, and surrounding it a zone in which there are visible only small particles or granules, amidst the greyish, turbid gelatine-liquid. The spreading of the colcnies, or what is the same, the liquefaction of gelatine takes place at a very rapid rate.

If, starting from such colonies, a fresh gelatine-plate is made, one finds very soon colonies of from ·05-·3 mm. in diameter. The superficial ones differ from the interior ones in that they are larger and already exhibit liquefaction of the gelatine, consisting of minute funnel-shaped openings in the latter. All the colonies, notably the deeper ones, are echinate in their appearance, in so far as from a central, on the whole circular mass (optical section) of more or less grey colour (transmitted light), there issue in different directions, more or less elongated, spine-or rod-like processes which represent a rather dense zone or girdle. A little below the surface of the gelatine the colonies sometimes give off small tuft-like offshoots towards the surface of the gelatine. The quite superficial colonies are light-grey translucent.

In *nutrient-gelatine* in a *test-tube* the bacillus forms, at first liquefying the gelatine, a growth of the shape of an inverted elongated cone, that rapidly advances. At last there is a dense and thick deposit at the bottom of a columnar mass, consisting of turbid, liquid gelatine. I did not see the liquefaction go down entirely to the bottom of the test-tube, so that here part of the solid gelatine remained unaltered.

On an *oblique surface* of *agar-agar* it forms a quickly spreading compact, greyish-white, superficial layer, with its surface somewhat wrinkled, also here and there showing thin and pretty high folds, which extend more or less horizontally from the edges towards the middle of the growth. The marginal parts of the latter are curved and undulatory; the contours themselves are pretty smooth.

BACILLUS E.

Microscopical Characters. About ·006 mm. long and ·0018 mm. broad cylindrical rods; occur in filaments, consisting of a great many individual rods, rounded at their extremities; no spontaneous movement.

On *gelatine-plates.* This form was only now and then met with in a few colonies. At the beginning they consist of but a few short threads crossing one another in various directions. They multiply pretty quickly, and after about three days present greyish, cloudy masses, having a central, darker, rounded part, where the gelatine is liquefied in a watch-glass-like manner, and from which delicate and multifariously ramified, and more or less elongated threads or filaments radiate, spreading themselves at a good distance over the surface of the gelatine. Besides that, I once saw a colony propagating in a similar manner at the bottom of the gelatine on the glass-plate. This micro-organism, therefore, is ærobic as well as anærobic.

In *nutrient gelatine* in a *test-tube* it grows, like Bacillus C, in the shape of an inverted cone, which, however, in this case approaches somewhat that of a cylinder. We have here a remarkably beautiful growth of extremely delicate, cloudy, and wool-fibre-like appearance; it is scarcely visible in reflected light, and reminds one vividly of a test-tube pure-cultivation of the bacillus of mice-septicaemia (Koch). It multiplies, in the interior of the gelatine, far more readily than does Bacillus C (see above). At the surface, where liquefaction of the gelatine begins, the micro-organism offers at first pretty much the same aspect as in its cultivation on plates; later on, with the advancing liquefaction of the gelatine, occurring from above downwards, it represents here a greyish-white film, covered by a liquid mass.

On a *sloping surface* of *nutrient agar-agar* it develops a luxuriant superficial vegetation of a grey-white colour. In the middle it is denser and more compact, being here folded up and provided with small prominences. At the edges it is thinner and has a lint-like appearance, being composed here of densely packed, handsomely ramified threads or fibres which stretch over the whole available surface of the agar-agar on either side. Besides this superficial growth, there is also some growth in the interior of the agar-agar, inasmuch as short, cloudy masses penetrate from the surface into the substance of the solid agar-agar.

In concluding this first part of my Notes on Water from the Sydney Supply from a bacteriological point of view, I wish to state once more that they relate exclusively to the pipe-water of a single locality, of a locality where its quality might, of course, be altogether different from that at other places in or about the city. The number of bacteria in a given sample of water bears, under otherwise the same circumstances, as has been already mentioned above, a direct relation to the amount of organic matter in it, and this organic matter will or may not be equally distributed throughout the whole supply. Therefore it certainly would be erroneous to apply what could have been stated about the condition of the water of that locality to the whole supply in general. Further, the above statements as to the quantity of bacterial colonies in the sample under consideration are the results of cultivation experiments made during a comparatively cool and dry season. How the results will turn out during the hot summer or in wet periods in winter, cannot yet be exactly anticipated. Of special importance, of course, it would be in these bacteriological examinations by means of the gelatine-plate-process, always to have a watchful eye on whether the bacillus of typhoid fever, this social calamity, might with absolute certainty be found in the Sydney water, or not.

EXPLANATION OF PLATES.

PLATE X.

Fig. 1.—Bacterial colonies growing in a gelatine plate-cultivation, out of 1 ccm. of pipe-water (July 19, 1886), after two days' incubation at about 65° F. (18⅓° C.) Natural size. (The layer of gelatine is represented here as in the following figures by a brownish tint).

a. Liquefying colonies of Bacillus A. (p. 915).

b. Non-liquefying colonies of Bacillus B. (p. 917).

Fig. 2.—Liquefying colonies (c) of Bacillus C. (p. 919), after several days. Natural size. The other colonies which were at the same time found on the plate are omitted (July 29th, 1886).

PLATE XI.

Fig. 3.—Bacterial colonies from ¼ ccm. of water (Aug. 17th, 1886), after several days' incubation. Natural size.

a. Colonies of Bacillus A. (p. 915).

b. Interior }
b,. Superficial } Colonies, non-liquefying, of Bacillus B. (p. 917).

Fig. 4.—Colonies from ½ ccm. of water (Aug. 23rd, 1886), after some days. Natural size.

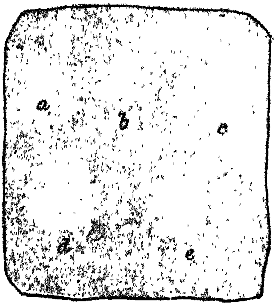
a. Bacillus A.

b. b,. Bacillus B.

c. Bacillus C.

d. Liquefying colonies of Bacillus D.

1



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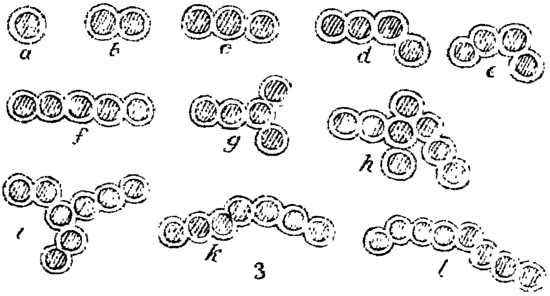

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C. K. del.

S. Sedgfield lith.

ON A REMARKABLE BACTERIUM (*STREPTOCOCCUS*) FROM WHEAT-ENSILAGE.

BY OSCAR KATZ, PH.D., M.A.

(PLATE XII.)

A short time ago I obtained through the kindness of Mr. A. Bruce, Chief Inspector of Stock for New South Wales, some of the wheat-ensilage which had been used at Coonong, Urana District, N.S.W., as food for horses, amongst which a fatal epidemic, though of short duration, subsequently broke out. The samples under notice were of three descriptions: one was labelled as "fresh ensilage," another as "three or four days exposed showing mould fungus, as given to the horses," a third "fully developed mould fungus."

Among the micro-organisms—in all, three kinds of bacteria, and two kinds of moulds—which I cultivated out of the last-mentioned sample, there was one bacterial species that especially struck my fancy, and is interesting in more than one respect.

Starting with an infusion of the particular sample in a sterilised ·6 p.c. common salt solution in a test-tube, and cultivating a minute part of it (or even a dilution of this minute part) in 10 p.c. nutritive gelatine on glass plates, for a few days, and at a temperature of about 20° C. (68° F.), one finds, at the surface of the layer of gelatine, amidst vegetations of the other micro-organisms, small greyish-white to slightly yellowish-white colonies (Pl. XII, fig. 1, x), having—at least the larger ones—their outlines irregularly crenate or emarginate. With the advancing enlargement of these aggregations or colonies, liquefaction of the gelatine underneath the latter commences, and the colonies themselves now present beautiful whitish substantial patches, the central, greater part of which is watch-glass shaped, being situated in a watch-glass-like excavation, now filled with liquid gelatine (Pl. XII, fig. 2, a, b, c, d, e,); the periphery of the colonies forms a somewhat elevated zone or girdle round the inner mass, on the surface of not yet liquefied gelatine, and is made up, in rather an ornamental manner, of more or less elongated fringe-like processes or appendages, the arrangement of which is exhibited in Pl. XII, fig. 2, a-e.

On examination with a low power of the microscope (70-122 diam.) the contents of these colonies are seen to be crummy or flocculent. In the interior of the gelatine the micro-organism vegetates much more slowly and does not exhibit that beautiful arrangement of the superficial colonies.

I examined very young colonies, of from ·01—·05 mm. diam., and in their optical section they appeared, upon the whole, as circles or (not so often) as ellipses, whereas the older colonies have never been found of such a regular shape. But here and there small projecting or retrograding parts were met with in the contours which in themselves were not perfectly smooth and sharp, but looked as if lined with extremely minute teeth or prominences. The contents are finely granular, and of a more or less yellowish-grey colour (transmitted light).

On investigation with high powers of the microscope all these colonies are seen to consist of micrococci which occur singly, in twos, but more commonly forming strings or chains, often twisted or bent. (Pl. XII, fig. 3.) Hence the name *Streptococcus* for such kinds of micrococci. These chains are aggregated or grouped in clusters (which represent the substance of the colonies). The individual streptococci are more or less globular, and measure about ·0014 in diameter. They stain intensely with methylene-blue solution, and other aniline dyes.

Inoculated into nutritive gelatine in a test-tube (pure cultivation) the *Streptococcus* grows along the course of the inoculating platinum wire to a slightly yellowish-white, somewhat flattened thread, made up at first of numbers of small beads. It is especially at the free surface of the gelatine that it propagates, and here it commences to liquefy the latter in a funnel- or watch-glass-like manner, besides spreading itself beyond the margin of this excavation in the shape of a very thin, fragmentary, greyish-white film over the surface of the gelatine. Afterwards the growth in the gelatine presents an inverted conical bag filled with yellowish, densely packed flocky masses of the micro-organism. The liquefaction advances from above downwards, till, in course of time, there is seen in the test-tube one liquid mass, in which light, filamentous, fibrine-like masses (belonging to the micro-organism) are suspended, and at the bottom a noticeable deposit of yellowish colour.

On a sloping surface of a 1 p.c. nutrient agar-agar in a test-tube the organism multiplies readily at ordinary temperatures, and, after some days' standing, the cultivation presents a greyish, flat, superficial growth which appears wrinkled or folded. This is principally marked along the streak of inoculation, where the vegetation, being also more luxuriant, looks as if covered with short yellowish-white threads, interwoven with each other.

On the cut surface of a sterilised potato the *Streptococcus* likewise readily propagates. (Pl. XII, fig. 4.) After some time of incubation at ordinary temperatures, it developes to considerable masses of a peculiar yellowish-white tint and creamy consistency. These masses do not extend far over the nutrient surface. They resemble, following the track of the inoculating platinum wire, an elongated chain of mountains, the edges of which are characteristically emarginated, as if lined all along their contours with small, bead-like prominences. All over the surface of these plateaux, and quite close to one another, very shallow furrows are visible which run down to the borders of the masses; (conf. Pl. XII, fig. 4, where this appearance is roughly indicated.)

I may well note here that with the propagation of the *Streptococcus* a peculiarly sour but not very strong smell was associated, which was especially noticeable in the pure culture of the bacterium on a potato in a small glass capsule.

Whether this micrococcus, or the other Schizomycetes obtained from the wheat-ensilage in question, (Plate XII, fig. 1, x, y, z,) is pathogenic or not, has not yet been ascertained, as experiments on animals have not yet been tried. Unfortunately I am not in possession of preserved pieces of any of the organs of the horses which had been feeding on the ensilage, and afterwards succumbed to the reported epidemic. A microscopical examination of such organs would, undoubtedly, have proved a material aid in the elucidation of the question.

EXPLANATION OF PLATE XII.

Fig. 1.—Part of a plate-cultivation in 10% nutrient gelatine of an infusion of the wheat-ensilage. The white colonies, x, belong to the *Streptococcus* described above; y, yellowish-green colonies of short bacilli liquefying the gelatine; z, bluish-white colonies of another bacillus.

Fig. 2.—a, b, c, d, e. Some of the *Streptococcus*-colonies in a more advanced state of growth.

Fig. 3.—a to l. Microscopical appearances of the *Streptococcus* (diagrammatic). The zones round the cocci represent the bright peripheral capsules observable in Bacteria.

Fig. 4.—Cultivation of the *Streptococcus* on potato (p. 927).

BOTANICAL NOTES.

By Rev. W. Woolls, Ph.D., F.L.S.

(1) Note on *Lindsœa trichomanoides* (Dry.)

This elegant fern, which sometimes rises to the height of a foot and more, is common to Tasmania, Australia, and New Zealand, in which last locality it has a very wide range and is intimately connected with *L. Lessonnii.* Some years since, I forwarded a specimen of this fern to Baron von Müller, but as it was without fructification, Mr. Bentham regarded it as doubtful (*Flora Australiensis*, Vol. VII., p. 721). Since the publication of our Flora, *L. trichomanoides* has been found at the Kurrajong by Mr. Comrie, the Rev. W. Scott, M.A., and Mr. R. Selkirk. I forwarded Mr. Selkirk's specimens to Baron von Müller, who regards the discovery as interesting, and expresses an opinion that the fern will yet be found in Victoria. In Hooker's *Synopsis Filicum*, it is stated that Mr. Cairns has recently gathered the same species in Fiji. The typical form is much larger than the var. *Lessonnii*, the fronds being more compound, sometimes bi-pinnate and even tri-pinnate.

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(2) Note on *Crowea exalata* (F. v. M.)

This rutaceous plant is a small shrub, mentioned formerly by Baron von Müller as an " Alpine species," and subsequently united by him with *Crowea saligna* (Andr.), which is common near the coast. Mr. Bentham, judging from the general habits, foliage and less angular stems of *C. exalata*, describes it as a distinct species; and I believe that the Baron, influenced by the specimens which I sent to him last year, is inclined to the same opinion. It is rather curious that only one shrub of this species has ever been found on low ground, and that was near Parramatta some years ago. Within the last few months, a few more shrubs have been discovered at the Kurrajong.

NOTE ON A LABYRINTHODONT FOSSIL FROM COCKATOO ISLAND, PORT JACKSON.

BY PROFESSOR STEPHENS, M.A., F.G.S.

The circumstances under which this very interesting fossil was discovered and obtained are sufficiently curious to merit some notice. And perhaps such notice may serve to give fresh encouragement to those who had begun to despair of finding any satisfactory evidence as to the epoch of our Hawkesbury formation, and may prevent the careless destruction of such evidence as will from time to time be unearthed in the ordinary processes of quarrying.

It is to the quick eye of Mr. Maiden, the energetic Curator of the Technological Museum, that we owe, in the first instance, the very important discovery which has now been made. Mr. Fagan, an engine-driver employed on the works of the new Dock at Biloela, or Cockatoo Island, had heard from one of the labourers that some "funny things" had just been dislodged by a blast in the process of excavation. One of these "funny things," a very large *Planorbis*, or some closely allied form, he obtained, and handed to Mr. Maiden, who most unfortunately was, the very next day, attacked by a severe and dangerous illness. On his recovery, some weeks afterwards, he communicated with Mr. C. S. Wilkinson, Government Geologist, showing him the supposed *Planorbis*, and informing him of the occurrence of other fossils in the same locality. Mr. Wilkinson at once despatched his best "fossil-hunter," Mr. C. Cullen, to the place, who found that the greater portion of the find, a whole truck load, had been shot down into the waters of the harbour, and covered up by great quantities of less interesting material. He picked up, however, one block of sandstone which had an unusual and evidently important impression of some organic structure. The stone itself was a rough conglomerate, with some large holes where pebbles had fallen out, and a few fragmentary pieces of shale still embedded.

When Mr. Wilkinson showed me the specimen, I recognised it at once as a thoracic or throat-plate of *Mastodonsaurus*—probably *M. robustus*, or at least very closely related to that species,—in consequence of its exact resemblance to the fossil from the University collection which lies beside it on the table. We have not the material here for an exact determination such as will be made in England; but there is and can be no question as to the Labyrinthodont character of the fossil, nor, as I believe, as to its identification with some species of *Mastodonsaurus*.

Now many considerations had induced the geologists of India and Australia to class upon the same horizon the rocks of the Upper Gondwana of India, the Upper Karoo beds of South Africa and the Hawkesbury-Wianamatta beds of East Australia, with, the Keuper and Rhætic or Upper Triassic beds of Europe.

But the evidence so far as Australia was concerned was not quite satisfactory, although increasing year by year; and I cannot but think it a very happy coincidence that this Amphibian should have turned up immediately after Mr. Oldham's papers upon this subject in the Geological Magazine. I do not intend to enter at present into any arrangement of the facts which have been already ascertained, since I am sure far more competent hands will soon be at work upon the subject. There are, however, a few points to which I may draw your attention with reference to the distribution of the Amphibia, and the early Mesozoic Geography of Australasia and New Zealand.

It was remarked many years ago by Darwin, that these animals, Batrachia or Amphibia, had a very closely restricted distribution. They are not able to bear contact with salt-water, and are consequently absent from almost all oceanic islands. And of the four great orders into which the class is divided, only one is at present known in the Australian province. We have no Newts or Salamanders, nor any Blindworms (*Cæcilia*) at present, nor have we any fossil records of their previous existence. But we have now two distinct types of Labyrinthodonts from Australia, one—*Bothriceps*, described by Professor Huxley, from a skull, of which the locality is unknown, except that the fossil was found somewhere in Australia. The other—the plate now before us.

It is clear that during the period when these animals made their way into this region, there must have been an unbroken land communication between India and Australia; and it seems likely that it was during this time that *Ceratodus*, and perhaps *Osteoglossum*, immigrated. *Ceratodus* and *Mastodonsaurus* are found constantly associated in beds of the same age.

Perhaps the ancient land-connection between N.E. Australia, Lord Howe Island, Norfolk Island, New Zealand, New Caledonia, and which extended to Indo-Malaya, as has been beautifully shown by Mr. Wallace in his "Island Life," may have been severed in very early Mesozoic times. And it is possible that some of our singular forms of life, recent and fossil, may have been introduced at an earlier period than is generally thought probable. Indeed I think that the presence of *Megalania* in both Australia and Lord Howe Island, and the relationship of the New Zealand *Hatteria* to *Hyperodapedon*, together with all the remarkable peculiarities of the Australian Fauna, seem to point in that direction.

Although any exact determination of the true character of our interesting discovery is not under present circumstances possible in this quarter of the globe; yet it may be of some service, in case of similarly happy accidents in the future, to indicate the principal sources from which information as to the ancient habitats and forms of Labyrinthodonts may be obtained. And first there are the two reports edited by Mr. Miall, and published in the Reports of the British Association for 1873 and 1874, which contain a summary of everything known up to that time. Later information as to the bibliography of the subject will be found in Palæontologia Indica (Ser. IV, Vol. I, Parts 4 and 5). The attention however of the committee thus represented by Mr. Miall was principally directed to the skull, which is in general the most perfectly ossified, and therefore the most successfully preserved (in the very rude methods which nature adopts) of all portions of the skeleton. The *Bothriceps* of Huxley, from some undefined part of Australia, is also known only by the head; and it will therefore be very difficult to make out the true relations of our fossil unless, as I have already said, it may be determined as a *Mastodonsaurus*. In Pictet's classical work on Palæontology, published indeed a long while ago, in 1853-7, we find in plate XXIX. fig. 6, "Piéces scapulaires de la même espèce" (*Mastodonsaurus* or *Capitosaurus robustus*) "un douzième de la grandeur naturelle." The figure, justly enlarged, corresponds so closely with our specimen that I cannot doubt their practical identity. It was the presence of the fossil in the University collection, here shown, from Stuttgart, that led me in the first instance to inquire what function it could have fulfilled in the living animal, and it was Pictet who gave me the desired information. He states in the text that "*Capitosaurus robustus* H. de Meyer, a été trouvé dans les étages supérieurs du Keuper, pres de Stuttgardt, M. Quenstedt pense qu' on doit réunir aux Mastodonsaurus." Quenstedt's view seems to be accepted; but the whole group still presents many and serious difficulties. When Professor Owen first identified *Cheirotherium* and *Labyrinthodon*, a great puzzle seemed to have been solved. But perhaps there are no grounds for this identification; it is quite as probable that the famous foot prints were made by a reptile as by an amphibian; and we have actually no trustworthy evidence at all as to the character of these antiquated creatures' limbs. Some were very likely, like *Dolichosoma*, quite destitute of these appendages; others, like *Archegosaurus*, certainly possessed them. But how they moved with them in the warm swamps or rivers which they seem to have frequented, we do not know, nor have we reasonable grounds for conjecture.

This at least we may now assert of the Hawkesbury formation, that if it had, as Mr. Wilkinson's observations render probable, a glacial period, it had also one or several eras of genial warmth and moisture. The *Planorbis* to which reference has been already made, the Unionidæ which have been discovered in the Wianamatta rocks, the highly carbonaceous and even bituminous character of much of the Parramatta and Kenny Hill Shales, and still more emphatically the extraordinary plant from the Parramatta River, described by Baron von Müller as *Ottelia præterita*, (Jour. Roy. Soc. N.S.W., 1879, p. 95), and a large fruit recently obtained by Mr. Wilkinson, demonstrate this. Now here is another singular correspondence between our Hawkesburys and the Trias of Europe.

Both in the preceding (or Permian period) to which our Newcastle coal is reasonably referred, and in the Triassic we find, all over the world, evidences of ice. And at the same time we find in the organic remains abundant evidence of heat. It can hardly be doubted by any unprejudiced person that both these periods, whose records testify to enormous and now-a-days unparalleled changes in all plant and animal life, were also times of enormous and perhaps unparalleled change of climate, during which northern forms were driven to the south, with vast loss not only of individuals, but of species, to be driven back again in the course of another ten thousand years or so, losing on their road the greater portion of their whole army. This is the true solution of the strange break between the Palæozoic and Mesozoic time, and is strongly corroborated by the fossil now before us; while Dr. J. Croll has demonstrated the fact on different grounds.

When this family lived and flourished somewhere north of the equator, with *Hyperodapedon*, *Ceratodus*, and other contemporaries, cold and inclement seasons began to increase their severity; and as the Labyrinthodont clan were entirely carnivorous, they had to travel south after their food, since it also had its own power of locomotion. And so—after thousands of years—they found themselves in South Africa, South America, India, and Australia; and subsequent reversal of all climatic conditions drove them in course of time northwards again. But probably they met with arms of the sea, or some other obstructions which interfered with their return march, and they disappeared from the earth. They appear suddenly as the very highest type of Amphibia in the Carboniferous period, and by the incoming of the Liassic they are lost. (A doubtful exception I take the liberty to disregard). They were, among the frogs and their compeers, like crocodiles among lizards, various in size, sometimes gigantic, slow perhaps, but powerful, and bent on devouring.

I ought not to omit—though it is not perhaps a very strong point in evidence—the occurrence of very similar, if not identical forms of a small fossil Entomostracon, *Estheria* sp. in the Indian Upper Gondwana, the Argentine District of South America, and the Australian Waianmatta. I have seen the small bivalve carapace from the borings at Moore Park, through Dr. Cox's kindness, and I have also found them near Campbelltown. The same genus—I dare not say species—is quite common in the Triassic and Rhætic beds in England, and upon the continent of Europe.

And so one draws to the conclusion that the older school of geologists was right in the assumption that similar Faunas testify to contemporaneous epochs. Much has been said and written against this view; and the present distribution of animal and vegetablelife upon the globe is the very strongest—and indeed it is very strong—weapon of the assailants. Still, when you find the petrological characters alike, when you discover *Unionidæ*, *Palæoniscus*, *Cleithrolepis*, *Platysomus*, *Mastodonsaurus* as fossils, and *Ceratodus*, *Hatteria*, Marsupials, and Monotremes still living in thesame province, you are, or at least I am, driven to believe that the old view was right, and that it is only since the Jurassic period that the great geographical differentiation of Plants and Animals commenced.

I ought perhaps to have commenced by stating what part of the animal we see preserved upon the stone. But I am a little diffident in the matter, and though my own conviction is strong, I feel that others may form very different views. However, the facts are as follows:—All the Mastodonsaurus group of the Labyrinthodonts, and some others, possessed a very curious breast armour, perhaps in compensation for the slight and poor development of the pectoral arch in the true skeleton. The plates of which this armour or breastplate was formed have often been mistaken for Chelonian remains; but are remarkably well characterised by the deep, long, and bifurcating or reticulated channels which are ordinarily called muciferous canals. Of these plates they had three—one rhomboidal in shape, medial and posterior, upon the lower portion of the throat, and two lateral and forward, slightly overlapping the medial, and compared by Owen—in *Archegosaurus*—to the elytra of a beetle. One of these is now, I believe, before you.

In conclusion I beg to be allowed to quote, from the Memoirs of the Geological Survey of India, a few passages which are certainly curious, and which I think bear out—so far as such evidence can—the identity of our upper coal measures and Hawkesbury with the Damudas of India. We have the same conglomerates, the same false bedding of the sandstone, and now at last the satisfactory declaration of *Mastodonsaurus*,

In the report on the Karanpura Coalfield, Mem. Geol. Survey, VII. 3, Mr. Hughes says—of the Upper Damudas, appearing like Panchets—"In many places the rocks have been weathered in the most peculiar manner. Small pinnacles and domes are left here and there, and their whole surface presents the appearance of successive irregular circles of little scallop-shaped recesses." "This weathering is more particularly apparent in those portions of sandstone which stand up prominently in the shape of domes or pinnacles."

No one who is acquainted with Hassan's Walls, or any similar district on the edge of the Hawkesbury sandstone can fail to see the exactness of this description, if transferred to this country.

Mr. Mallet again, Mem. Geol. Surv. Ind. VII. 1, gives an account of the escarpments with which he was concerned, which will precisely fit our Blue Mountains. The same author gives an admirable account of the process of erosion by which the sandstone valleys have been excavated.

Again, Mr. Blandford (Pal. Ind. Ser. IV, Vol. I, Part 1, p. ii.) describes the Panchet beds as follows :—

"The Panchet beds consist mainly of alternations of fine red clay and of coarse sandstone. The beds of the former are thin, rarely exceeding 12 feet in thickness, and continuous over considerable areas ; the latter are sometimes above a hundred feet thick, most irregularly and obliquely laminated, and evidently deposited by water flowing with a strong current. The component particles of the sandstones are principally grains of quartz and of undecomposed felspar, with numerous plates of mica, all evidently derived from the metamorphic rocks. These sandstones are rarely conglomeritic ; the pebbles, when they do occur, comprise fragments of coal, shale, &c., derived from the Damuda series. Towards the base of the Panchets, fine muddy silts and shales occur. Towards the top conglomerates are more frequent. Organic remains are scarce throughout. The whole thickness of the series, excluding some overlying coarse ferruginous sandstones and conglomerates, which probably belong to a higher formation, is at least 1,500 feet.

"It was in one of the more conglomeritic bands, an argillaceous sandstone with pebbles of shale and of other rocks, and occurring about 500 feet above the base of the series, that the bones now described were found. They were invariably detached, even single teeth being met with ; the jaws were fragmentary, and many of the bones had been rolled and rounded. In addition to the first locality at Deoli, other spots yielding fossils were subsequently found, all apparently at the same general stratigraphical horizon, and probably in the same bed, which was traced by Mr. Tween for a considerable distance. The other fossils met with in the Panchet beds were a few plants and some *Entomostraca*, the most abundant of which was an *Estheria*, apparently. *E. Mangaliensis*, R. Jones.

"Independently of the presence of the *Estheria*, which has been shown by Professor Rupert Jones to be essentially a fresh (or brackish) water genus, there can he little doubt that all the beds of the Ránigani field were deposited in fresh water, and I believe the larger portion to have been the valley or alluvial deposits of a great river. The total absence of marine remains, and of mollusca of any kind, the extreme rarity of limestone, the constant traces of rapid currents shown by the oblique lamination of the sandstone, all favour this view. Lacustrine or estuarine conditions may perhaps have prevailed during the deposition of the Talchirs and of the basement beds of the Panchets, possibly even of the Damudas (though of this I am extremely doubtful), but I am convinced that the mass of the Panchet beds are a fluviatile deposit. The universal evidence of current actions in the sandstones precisely resembles those which may happen in the valley deposits of the great Indian rivers, in which also stratification of fine clay is frequent, while the first named phenomenon is totally inconsistent with deposition in lakes of any size. The recent distribution of Estheria and similar crustacea, especially in India, is in favour of their Panchet prototype having been an inhabitant of shallow pools, rather than of extensive deep basins of fresh water. Large marshes, more or less permanent, frequently disappearing almost completely during the dry season, abound in the valleys of large rivers, indeed after heavy rains the greater portion of the river-valley becomes an immense marsh, in which fine clays may accumulate.

"During how great a period of geological time even small rivers may occupy the same valleys has been shown by Mr. H. B. Medlicott, in his memoir on the Sub-Himalayan rocks, and when it is borne in mind that it is only in periods of general subsidence, continuous or intermittent, that strata can be accumulated in river valleys, it is easy to conceive that a mere discontinuance of movement during a geological period may suffice to cause such changes as are observed between the Talchir and Damuda, and between the latter and the Panchet series; while, unless elevation has taken place, but little denudation will have been caused."

Though these extracts are very long, yet they cannot but be interesting to us, especially as regards the question of ancient climates.

(*Note.*—The general absence of shells is a remarkable peculiarity of the recent fluviatile deposits of India, mollusca abounding in all its rivers.)

NOTES FROM THE AUSTRALIAN MUSEUM.

ON AN UNDESCRIBED *SCIÆNA* FROM THE NEW SOUTH WALES COAST.

BY E. P. RAMSAY, F.R.S.E., AND J. DOUGLAS-OGILBY.

SCIÆNA NEGLECTA, sp. nov.

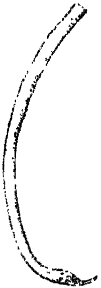
B. VII.: D. 10. 1/27-28: A. 2/7: V. 1/5: P. 17-18: C. 17-18: L. l. 51-54: L. tr. 9/21: Coec. pyl. 8: Vert. 11/13.

Length of head from 4·10 to 4·50, of caudal fin from 6·00 to 6·33, height of body from 4·40 to 5·40 in the total length. The length of the head is exactly three-fourths of the distance between the anus and the root of the middle caudal ray. *Eye*—Diameter from 5·10 to 5·50 in the length of the head, from 1·25 to 1·60 in that of the snout, and from 1·00 to 1·30 in the interorbital space, which is slightly convex. Snout a little obtuse, slightly overhanging the mandible; upper part of head straight; maxilla reaches to beneath posterior margin of eye. Preopercle weakly serrated on the vertical and anterior half of its horizontal limb, the serrations strongest at the angle. Two flattened opercular spines. *Teeth*—Upper jaw with a row of strong curved teeth, distant one from the other, behind which is a band of villiform teeth, broadest in front; lower jaw with a row of similar but much smaller teeth, between each of which are irregularly scattered several small conical ones. *Fins*—Dorsal spines weak, the third and fourth the longest, from 2·20 to 2·40 in the length of the head. Anal commences beneath the twelfth ray of the second dorsal. Pectoral about five-sevenths of the length of the head. Ventral rather shorter. Caudal rounded. *Air-bladder*—large with about 26 lateral fringes on each side. *Gill-rakers*—18, strong, some very short. *Colors*—deep steel-blue above gradually changing through the silvery of the sides into the white of the abdominal region; a large black axillary blotch. Head rather duller than back, the cheeks and preorbitals tinged with gold. All the fins, except the white ventrals, pale brown. Irides golden and brown. Inside of jaws, and a semi-circular band beneath the edge of the opercle orange.

The fish for which we have thought it right to form the above species is the common Jew-fish of our market, which has hitherto gone by the name of *Sciæna antarctica*, Casteln.; from this however it differs by the great length of the maxilla, by the presence of numerous irregular small teeth between the curved ones of the lower jaw, by the size of the orbit, by the shortness of the snout, &c. From *S. aquila*, Lacép. it may at once be distinguished by the position of the anal fin, and the dentition of the upper jaw.

The three examples examined were obtained during the last month in the Sydney market, and came from Broken Bay; they measured respectively 38·5, 21·8, and 19 inches, and are therefore a fair working series. The smallest is a female, the two others males, but in all three the spawn is but little developed.

We also take this opportunity of pointing out that *Callionymus reevesii*, Rich. (Voy. Sulphur, Fishes, p. 60, pl. 36, f. 4) is not the female of *Callionymus curvicornis*, Cuv. and Val., as stated by Dr. Günther, (Cat. iii., p. 145), since we have several specimens of the *Callionymus valenciennesii*, Schleg. (Faun. Jap., Poiss. p. 153, pl. 78, f. 3), which Dr. Günther places as a synonym of *C. curvicornis*, two of which are females with the ova fully developed; we are now enabled to record *C. reevesii*, from Port Jackson, having obtained a fine example on the 11th instant.



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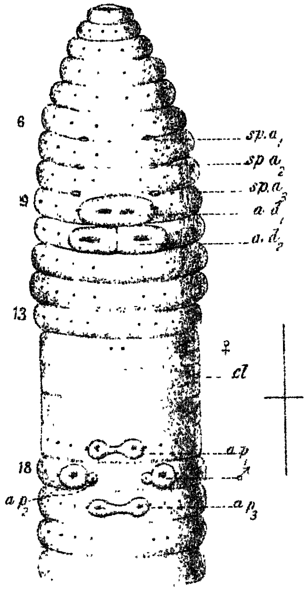

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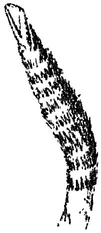

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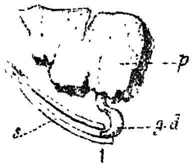

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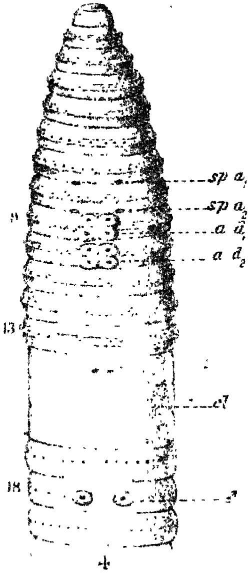

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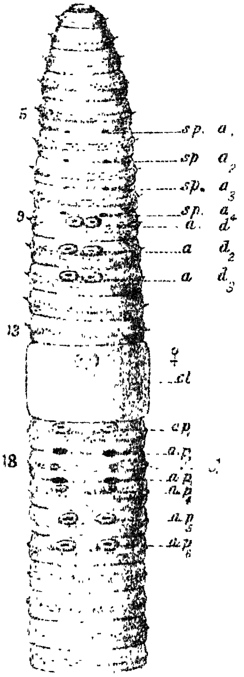

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E. T. Baker del. ad nat.

S. Sedgfield, lith.

NOTES ON AUSTRALIAN EARTHWORMS.

PART II.

By J. J. FLETCHER, M.A., B.Sc.

(Plate XIII.)

In the following paper attention is called to the fact that the species of earthworm of which I gave a general account on p. 539, supposing it to be the *Lumbricus Novæ-Hollandiæ* of Kinberg, is in reality different from this; and descriptions of nine new species of postclitellian earthworms are given, anatomical details as before being reserved for further consideration. Of these worms one species belongs to the Australian Region (Darnley Island) rather than to Australia proper, and a second is in all probability an introduced species; these two are considered here for convenience. The others are from New South Wales or Queensland.

By the kind permission of the Hon. William Macleay I have been able to examine the earthworms in the Macleay Museum. These, exclusive of several species from this colony of which I have myself collected examples, comprise specimens from Percy and Darnley Islands, and from North Queensland, and represent six species probably all new; I regret therefore, that, owing to a paucity of material or to the immature condition of some of the specimens, I am able to give descriptions of only three.

Percy Island is a well-wooded, fertile, uninhabited island belonging to the Northumberland Group, and lies some 50 miles due east of the Australian coast in latitude about 21° S. During the voyage of the 'Chevert' to New Guinea in 1875, a short stay was made at this island, during which Mr. Masters obtained three earthworms belonging to two species. I am unable to give satisfactory descriptions of these; but as they are interesting forms apart from their insular habitat, I give such particulars about them as I can, in the hope that any one who has the chance of visiting this island will make an effort to collect earthworms.

At Darnley Island in Torres Straits about 80 miles from the New Guinea coast, and 27 miles from Murray Island, also during the voyage of the 'Chevert,' Mr. Masters obtained two good specimens of a typical perichæte worm, which I have described under the name of *Perichæta Darnleiensis.*

The discovery of earthworms in these two small islands is not without interest, because these animals have not been hitherto recorded from any locality nearer to us than the much more extensive island of New Caledonia, though there can be little doubt that they are to be found in New Guinea.

The other earthworms in the Macleay Museum have recently been collected by Mr. Froggatt in the neighbourhood of Cairns, North Queensland. There are specimens of various stages belonging to three species, of which I am able to give descriptions of two, one of them a typical *Perichæta*, while the other is more like the species met with further south. The third species is represented by two small and immature specimens to which reference is made later on.

Of the other worms described in this paper, one is in all probability an introduced species, while the other five are indigenous to New South Wales, and, with one exception, have been obtained within a radius of 20 miles from Sydney. Two of them are worms somewhat similar in appearance, and having eight rows of setæ, but one of them has two gizzards and is referred to Perrier's genus *Digaster*, while the other has but one, and provisionally is referred to the genus *Cryptodrilus.* The remaining three are new species of the genus *Perichæta.*

The nine species of earthworms which I have now described as belonging to the genus *Perichæta*, fall into two very well-marked groups; one of them characterised by the possession of complete circles of setæ, by the presence of a pair of conspicuous cæca given off by the large intestine in segments XXV or XXVI, by the absence of the mesentery between the two segments containing the gizzard, and by having the latter organ situated a segment or two further back, as well as in one or two other little matters. To this group belong the Queensland and Darnley Island Perichætes, and a third species supposed to have been introduced into this colony from Mauritius. They are all typical species of the genus *Perichæta,* and are very similar to others described from various parts of S.E. Asia, the East Indies and elsewhere. It is interesting to note the occurrence of these typical perichætes at Darnley Island and North Queensland, whereas, further south they seem, as far as is known at present, to be absent (unless McCoy's *P. Gippslandica* be one), and to be represented by the perhaps more modified forms such as we find in this colony. These belong to the second group characterised by the hemispherical arrangement of the setæ, the circles being interrupted in the median dorsal and ventral lines, by the absence of cæcal appendages of the large intestine, by the gizzard being placed between the two mesenteries of one segment though these are often displaced, and usually by the possession of fewer than four pairs of spermathecæ. I have described six species belonging to this group, all, with the exception of one from North Queensland, from this colony; while I have a few small specimens of at least probably three undescribed species also from New South Wales. Similar differences have been pointed out by other writers in species usually referred to the genus *Perichæta,* so that Beddard has suggested the advisability of instituting a second genus for the reception of species resembling those of the second group abovementioned. I postpone the further consideration of this matter for the present as I feel sure many new Australian species remain to be discovered.

By the kindness of Mr. Haswell I have been able to see a copy of Kinberg's paper referred to on p. 539, from which I find that the species of worm of which I gave a description under the name of *Lumbricus Novæ-Hollandiæ* is different from that described by Kinberg under this name, and must therefore be separated from it as a new species. The following modifications may, therefore, be made in the list given.

A. *INTRACLITELLIAN WORMS.*

1. LUMBRICUS NOVÆ-HOLLANDIÆ, Kinberg.

Lumbricus Novæ-Hollandiæ, Annulata nova, Ofversigt af Kongl. Vetenshaps-Akademiens Förhandlingar 1866, p. 99.

Lobus cephalicus integer, postice quadrangularis, antice semicircularis, segmentum primum corporis longitudine æquans; cingulum segmenta corporis 20-26 occupans; tubercula ventralia (male pores) nulla; longitudo 75 mm.; segmenta 110. Setæ ubique binæ approximatæ; juniores 1-2 validiores. Jun.

Sidney Novæ-Hollandiæ, ubi terram humidam habitat.

Obs.—The above is Kinberg's description in full. I have not yet met with any Australian worm having a clitellum comprising segments XX to XXVI.

2. LUMBRICUS (ALLOBOPHORA) AUSTRALIENSIS, n. sp.

Lumbricus Novæ-Hollandiæ, Flet. *ante* p. 539.

For this species of which I have already given a description I propose the above name. It differs from Kinberg's species, among other things, in the clitellum occupying segments XXVII to XXXIV.

Since my description was published I find that in a recent paper Bergh mentions that a fourfold arrangement of the vesiculæ seminales obtains in several European species which are referred to Eisen's sub-genus *Allobophora*, characterised by having the male pores on XV, and the buccal ring only partially divided by the prostomium. (1) As the worm described by me also possesses these three characters, it belongs to the same group.

As further evidence of the abundance and wide distribution of this species I may mention that through the kindness of Mrs. Caird and the Rev. K. Corner to whom my thanks are due, I have received two parcels of worms, one from Braidwood, the other from Morpeth on the Hunter. In both cases the specimens, which were collected and sent as samples of the worms of the localities without reference to any particular worm, belong, with very few exceptions, to the species in question, though each parcel also contained one or two immature examples of a new species. One of these from the Hunter is characterised by having three gizzards.

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(1) Zool. Anz. ix. Jahrg. p. 232. Abst. in Jour. Roy. Microsc. Soc. Aug 1886, p. 600.

C. *POSTCLITELLIAN WORMS*, *continued*.

10. DIGASTER ARMIFERA, n. sp.

(Plate XIII, figs. 1-3.)

I have already referred (*ante* p. 559) to *D. lumbricoides* described by Perrier from Port Macquarie, and to some worms found by myself at Marrickville near Sydney, which from the dissection of a single example seemed to belong to the same genus but to a different species. These specimens obtained in April were devoid of clitella; from under a stone at the same spot in July after rain I obtained a single specimen with a well-developed girdle; and in August and subsequently in September from under logs and sheets of bark, also after rain, at a locality near Parramatta I got six specimens of the same worm, all of which even the smallest show at least indications of the clitellum. These worms differ in several points from those described by Perrier.

The largest (spirit) specimen was 125 mm. long, 4·5 mm. broad; the length of the preclitellar region 13 mm., of the clitellum 8 mm., and the number of segments about 205. Body cylindrical, both extremities rather obtuse (in spirit specimens). Colour pale flesh-colour, the dorsal vessel shewing conspicuously through the integument. Prostomium depressed, narrow above, slightly concave inferiorly, extending on to the buccal ring for about ¼ of its width. Segments from about V to XIII are widest; after III they are bi-annulate, or as from VI the primary annuli may be more or less completely subdivided each into two, giving four annuli to a segment.

Clitellum comprising at least four segments, XIV to XVII, and sometimes in addition the posterior portion of XIII, or superiorly just the anterior of XVIII, margin or even both may be included in it; incomplete on the median ventral surface. One very small specimen (34 mm. long) has a very good clitellum which takes in a small portion of XII and includes XVII. As is the case with *Didymogaster* and *Notoscolex grandis*, after the breeding season the clitellum disappears; whereas in our *Lumbricus* and in other Australian worms it seems to be a more permanent structure.

The setæ from different regions vary slightly both in shape and length. From the posterior region they are about ·35 mm. long, and shew the usual slight sigmoid curve with divergent tips, the imbedded end being blunt. From a few segments in front of the clitellum they are straighter, slightly longer (·56 to ·63 mm.), with the enlargement about the middle more conspicuous; arranged in eight rows forming four couples, two ventral and two lateral; the setæ of the two outer couples further apart than those of the inner ones as in *Notoscolex*, and not at equal distances as in *Lumbricus*. Segments setigerous after the first. The curved penial setæ presently to be mentioned, are, without allowing for the curve, twice as long (1·26 mm.) as the ordinary ones.

The ventral portion of XVIII carries three pairs of pores of which the first and last on each side are in a line, and are just dorsad of the second row of setæ; they are either the pores of accessory glands, or the penial setæ may be protruded through them. The middle pair, presumably the male pores, are closer to the median line, and correspond with the intervals between the setæ of the ventral couples; all three pores on each side situated on the same eminence, and visible in worms without clitella. In one specimen there is a swollen ridge on the ventral surface of XIX; in another there appear to be a couple of pits or perhaps pores on this segment, with something similar on XVII. Oviducal pores two on XIV, in front of the line of setæ, and a little ventrad of those of the innermost rows. Spermathecal apertures two pairs, between VII and VIII, and VIII and IX, just dorsad of the line of the innermost rows of setæ. Dorsal pores after about XII.

On the median ventral surface of XI and of XII in all the specimens which have any indication of a clitellum there is a swollen nearly rectangular area, about as wide as the interval between the innermost rows of setæ, that on XI occupying the whole breadth of the segment, that on XII only the breadth of the first and second annuli; probably functioning as adhesive organs.

The alimentary canal comprises a muscular pharnyx coated superiorly with a white glandular substance, extending back as far as about IV: a short œsophagus leading to the first globular gizzard in V; a second and similar gizzard in VI, the first complete mesentery intervening between them; a small intestine extending from VII to XVI, of which the piece in VII is narrow, in the rest of its course vascular and with the interseptal portions more or less dilated, but without any special diverticula; and a large intestine commencing in XVII, unprovided with cæca. In each of the gizzard-segments is a pair of stalked arborescent organs; the masses of glandular tufts lie in front of the first and second complete mesenteries respectively; the ducts of the anterior pair run forward and enter the pharnyx, much as Beddard has described in *Acanthodrilus multiporus* (1); they are probably salivary glands, but whether the second pair are also, or what their relations may be, the few small specimens available for dissection till now have not enabled me to determine.

Six mesenteries from the second one behind the posterior gizzard to the posterior one of XII are thicker than elsewhere, and have interseptal ligaments.

The genitalia comprise, two pairs of white racemose testes in IX and XII, and not in X and XI as in *D. lumbricoides*, the anterior pair attached to the posterior mesentery of IX, the posterior pair to the anterior mesentery of XII, the testes of each pair independent of each other (2); two pairs of ciliated rosettes or vas deferens funnels in X and XI, the posterior portions

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(1) P. Z. S. 1885 p. 817.

(2) The bodies alluded to here and elsewhere in this paper as testes, appear to be different from the vesiculæ seminales of *Lumbricus*. The determination of their true character, however, requires special investigation, and I leave it for future consideration.

of the two vasa deferentia joining the prostatic ducts quite close to the prostates; a pair of small flattened slightly lobulated prostates in XVIII or in this and XIX, with a straight or bent genital duct; a pair of ovaries occupying the usual position in XIII; a pair of oviducts having the usual relations; and two pairs of spermathecæ, a pair in VIII, and a second in IX—the former in the second segment behind that containing the second gizzard—each spermatheca is an elongate narrow sac [hardly pear-shaped] the proximal portion for a short distance somewhat bent, with only a very rudimentary cæcum; in one specimen they lay backwards across the width of the segment and were folded on themselves, the distal portions somewhat pear-shaped but not of much greater diameter.

The vacant lower and lateral portions of the body-cavity of segments X and XI were occupied by large white masses consisting of developing and fully developed spermatozoa; but I am at present undecided as to whether they were independent of the ciliated rosettes or whether they were enclosed with these in a thin membranous sac. Behind the genital duct on each side are two narrow sacs lying close together, running outwards and backwards, their outer ends attached to the body-wall just behind the prostate, their inner ends close to the proximal portion of the genital duct; each of them contains two long curved penial setæ, which close to the pointed end are slightly swollen and studded with minute spinose projections; the tips are cleft, one of the divisions being straight the other curved, so as to present a somewhat chelate appearance (fig. 3). In all my specimens these setæ were retracted, so that there was no trace of them visible on the exterior; and it was not until I put one of the sacs under the microscope that I made the unexpected discovery of the presence of such setæ. Perrier makes no mention of them in his description of *D. lumbricoides*, but whether they are absent in that species, or whether, owing to the indifferent condition of his material they escaped his notice, remains to be seen. Similar setæ are characteristic of the genus *Acanthodrilus*; from any species of which, however, the two gizzards, the single pair of prostates, and the two vasa deferentia of the worm described by me, sufficiently distinguish it.

In the segments behind the gizzards as far back as XII there are transverse hearts.

Small tufts of glandular tubules attached to the cœlomic wall, and sometimes also to the mesenteries probably represent the segmental organs; they are largest in some of the anterior segments. Their external apertures (nephridiopores) are quite undiscernible.

Hab.—Marrickville near Sydney, Auburn near Parramatta, N.S.Wales.

Obs.—From under stones, logs, pieces of bark after rain ; not very common. This species is readily distinguishable from *D. lumbricoides* by (1) the gizzards being in consecutive segments instead of in V and VII, (2) the testes being in IX and XII instead of in consecutive segments—X and XI, (3) the clitellum including segment XVII, (4) the setæ of the outer couples being further apart than are those of the inner ones, whereas Perrier says that in his species the disposition of the setæ is that of *Lumbricus*, [and (5) the presence of penial setæ].

11. CRYPTODRILUS SACCARIUS, n. sp.

Five (spirit) specimens are from 57 to 74 mm. long, and 5 mm. broad ; the longest of them has the preclitellar region 10 mm. long, and consists of about 160 segments. Body uniformly pale or flesh-colour, cylindrical, posterior region more attenuate. Prostomium small, depressed, only slightly imbedded in the buccal ring. Segments widest and most prominent from the clitellum forwards; the IV and V are bi-annulate, while after VI they are tri-annulate, the anterior primary annuli being subdivided.

Clitellum comprises nearly five segments, XIII to XVII, a very slight portion on the anterior margin of XIII not included, complete all round, in one case not quite so thick on the ventral portion of XIII, and on XVII slightly encroached upon by the area carrying the male pores.

Setæ shorter than in *Digaster*, from ·28-·35 mm. long, the imbedded portion stouter, with a slight enlargement about the middle; in 8 rows, forming four couples, two ventral and two lateral, the setæ of the latter twice as far apart as they are in the ventral couples. Male pores two, each on a small papilla in the enlarged ends of a dumb-bell-shaped depression with raised rims on XVIII, nearly corresponding with the intervals between the setæ of the inner couples; oviducal pores on the ventral surface of XIV, in front and ventrad of the first seta on each side; spermathecal apertures four, a pair on a slight eminence on the anterior margins of VIII and IX, just dorsad of the innermost setæ, those of each pair the same distance apart. The accessory copulatory organs consist of two pairs of dumb-bell-shaped adhesive discs situated within two nearly elliptical areas on the junctions of XI and XII, and XII and XIII; on XVIII just on the outer side of each of the papillæ carrying the male pores is a second small papilla carrying a pore. The dorsal pores are not distinct in front of the clitellum.

The alimentary canal comprises a muscular pharynx occupying about three segments; a short œsophagus; a large gizzard between the mesenteries of V (or VI); a small intestine extending back to XIV, which in segments IX to XIII is provided with five pairs of large pouch-like diverticula (calciferous glands), very richly supplied with vessels; and a large intestine commencing in XV. In V and VI are two large aborescent stalked masses probably salivary glands.

The genitalia comprise two pairs of racemose testes in XI and XII, attached to the anterior mesenteries; two pairs of small ciliated rosettes lying free in X and XI, the posterior portions of the vasa joining the prostatic ducts close up to the prostates, which occupy segments XIX or XX to XXIV on each side; the genital ducts which come off from the anterior ends of the prostates but very soon bend inwards, are very long, thick, and convoluted or bent; a pair of ovaries in the usual situation in XIII; two oviducts commencing in the same segment and opening by separate pores on XIV; and two pairs of spermathecæ in VIII and IX, opening anteriorly. Each spermatheca consists of three portions, a distal cylindrical sac, a proximal longer and narrower duct or stalk which is bent or coiled, and a very small rudimentary cæcum or appendage attached to the stalk, wider than high and having on its apex three or four faint elevations. The distal portions of the anterior spermathecæ are apt to be displaced so that they may be found in either of the two preceding segments. On the outer side of each genital duct just as it passes through body wall is a small hemispherical pouch, whose apertures doubtless are those visible on the exterior. In one specimen there is a median one under the nerve cord a few segments further back.

There are about seven pairs of hearts the last of which is in XIII, and of which those in the segments containing the diverticula are the largest, especially the last two or three.

Small tufted masses attached to the cœlomic wall are probably the segmental organs; they are larger in the anterior segments.

Hab.—Hornsby (20 miles from Sydney), N.S.W.

Obs.—Six specimens obtained in September under logs. These worms do not agree very closely with those previously described as *C. rusticus*, but as I wish to avoid multiplying genera they are placed here for the present.

12. PERICHÆTA TENAX, n. sp.

(Plate XIII, fig. 4.)

The largest of four specimens comprises 133 segments, is 123 mm. long, 5 mm. broad, and has a pre-clitellar region 22 mm. long. Body cylindrical, tapering anteriorly and posteriorly, in spirit-specimens narrow at the clitellum. Colour dark red above, below whitish or with a tinge of brownish-yellow. Prostomium pear-shaped, extending back on the buccal ring for nearly its whole width, marked inferiorly and anteriorly by a continuous longitudinal groove, and divided by a transverse groove just behind the anterior margin of the buccal ring. From about VII to XVII the segments are widest (some of them 2 mm.) and except for the setigerous ridge are nearly flat and less convex than usual. After about V the segments are tri-annulate, the setæ being situated on the middle ridge-like annulus.

Clitellum complete all round, comprising three complete segments —XIV to XVI, while in addition a portion of XIII or of XVII or of both may be included. Setæ and dorsal pores visible on the clitellum.

Setæ short, about ·28 mm. long, relatively stout, a slight enlargement between the middle and the free tip but nearer the former; arranged on conspicuous ridges, the rows being interrupted for a narrow space in the median dorsal and ventral regions; the number of setæ per segment is about 28, but in the caudal region there may be from 32 to 36. All the segments setigerous after the first.

Male pores on papillæ on XVIII about in a line with the second row of setæ on each side. The two apertures of the oviducts are on a small elliptical area on XIV, one on each side of and close to the median line. The apertures of the spermathecæ are between VII and VIII, and VIII and IX, rather ventral in position and about in a line with the second or third row of setæ on each side. Dorsal pores present after segment IV. Nephridiopores not visible.

On segments IX and X there is a characteristic arrangement of what are probably adhesive discs. The ventral portion of these segments for the whole or nearly the whole breadth of them, and extending outwards on each side to about the second row of setæ is raised and thickened, and carries four circular pits or perhaps pores, one in front of and one just behind the setigerous ridge on each side. The areas may or may not be subdivided into two by a median longitudinal groove; they may be fairly rectangular, or each of them may consist of two 8-shaped areas side by side, the outlines of the 8's being very broad, with the pit or pore in the centre of each half (fig. 6). All my specimens show these structures, the arrangement of which at once distinguishes them from any other of our known worms.

The mesenteries from the anterior one of segment VIII to the posterior one of XIII are thicker than elsewhere.

The alimentary canal presents the usual divisions; the muscular pharnyx coated with a white glandular mass occupies about three segments; the short œsophagus occupying about a segment is followed by the large muscular gizzard in v, bounded posteriorly by the thin mesentery between v and vi, and which being pushed backwards by the large gizzard is invested by the next mesentery behind it; the small intestine extends back to xv, and in segments xi to xiii is provided with three pairs of pouch-like diverticula; and the sacculated large intestine commencing in xvi, which is not provided with cæca. As in other worms there are strong ligaments connecting the posterior margin of the pharnyx with the anterior rim of the gizzard.

There are two pairs of testes in segments ix and xii, hardly racemose, the first pair attached to the posterior mesentery, the second to the anterior one; the two pairs of ciliated rosettes occupy the two intermediate segments x and xi, the vacant portions of the cavities of which were filled with coagulated masses of fully developed and advanced stages of developing spermatozoa, but whether these were enclosed with the rosettes in delicate membranous sacs, or whether simply discharged into these segments, and coagulated by the spirit, was not easy to decide; the posterior portions of the vasa deferentia doubtless join the prostatic ducts, but I could not trace them in the two specimens dissected; there is a pair of prostates partly in xviii and partly in xix, incompletely divided into three portions by two transverse constrictions; the very short genital ducts without any *U*-shaped bend pass straight to open on to the exterior. The ovaries in xiii, and the two oviducts partly in this and in xiv have the usual situations and relations; the two pairs of spermathecæ are in viii and ix, narrower than in *P. australis*, and each has a club-shaped cæcum, shorter than the main pouch, not dilated at the tip.

In many segments the portions of the dorsal vessel between the mesenteries present indications of being incompletely double; there are transverse hearts in segments vi to xii, of which the last three pairs are conspicuously large. Small tufts of glandular tubules attached to the cœlomic wall are probably segmental organs.

Hab.—Auburn near Parramatta, N.S.W.

13. PERICHÆTA AUSTRINA, n. sp.

(Plate XIII, fig. 5.)

In six specimens the number of segments varied from 110 to 128, the length from 75 to 90 mm., the breadth was 5 mm., and the length of the preclitellar region 12 mm. The worms of this species live together with, and closely resemble *P. australis* (p. 361) in many of their characters, but the two species are readily distinguishable. The new worms are smaller, but, in regard to the shape and colour of the body; in having interrupted circles of setæ, the latter being more numerous in the posterior region; in having the male pores on papillæ on XVIII, and the oviducal pores on XIV; in the principal characters of the alimentary canal, and in the absence of cæca in XXVI; in the number, situation, and characters of the testes, of the ciliated rosettes, of the ovaries, and of the oviducts; and in the general characters of the vascular system, and of the segmental organs, the two species agree very closely.

They differ in the following respects:—(1) the prostomium extends further back on the buccal ring (for ¾ or even more of its width), and is marked by a median longitudinal groove which is prolonged backwards so as completely to divide the buccal ring, the latter also divided in the median ventral line by a distinct groove; (2) the clitellum comprises nearly the whole of XVII in addition to XIV, XV, and XVI; (3) the number of setæ is slightly different, there being 16 per segment in front of the clitellum, 24 or sometimes 20 for the greater portion of the region behind it, while in the last ¼ or ½ inch of the body except in the last few segments of it, the number may increase from 32 to 40, the setæ in this region being finer, closer together, sometimes at irregular intervals, and the dorsal interruption having all but disappeared. But the most characteristic points of difference are (a) the presence of three instead of two pairs of spermathecæ, and in the more ventral position of their apertures; (b) the presence of ventral rectangular thickenings presumably of the nature of adhesive discs on segments IX and X, and of copulatory or genital papillæ on segments XVII to XIX; and (c) the absence of a *U*-shaped genital duct.

Of spermathecæ there is a pair in each of segments VII, VIII, and IX; opening anteriorly, the apertures being between VI and VII, VII and VIII, and VIII and IX, and nearly in a line with the second row of setæ on each side; each spermatheca is pear-shaped and has a long cæcum as in *P. australis*.

On the ventral portion of segment IX is a raised elliptical or more or less rectangular area occupying the whole width of the segment and extending laterally as far as the second row of setæ on each side, while on it is a pair of small pits or possibly pores, one on each side of and rather close to the median line. The ventral portion of X is similarly modified, but here the thickened area extends further out on each side (to the 3rd row of setæ), and is divided by a median groove into two nearly square or oblong areas, with a depression or pit in the middle of each.

On XVII and occupying the interval devoid of setæ is a pair of small copulatory papillæ with a pit or pore on each, rather close together and with their inner margins joined by a short transverse ridge, so as to form a somewhat dumb-bell-shaped area. On XVIII ventrad of each papilla carrying a male pore is a second but smaller one, so that this segment carries four papillæ. On XIX the arrangement is similar to that on XVII but with the two papillæ a little further apart.

The prostates are very much incised or lobulated, and the short thick ducts run almost perpendicularly, and are joined by the vasa deferentia close to the glands.

The other organs do not differ materially from what has been described in *P. australis*.

Hab.—Burrawang, N.S.W.

The worms of this species live together with the four other species previously described from the same locality, and were collected at the same time as those mentioned, but thinking they were young specimens of *P. australis* I did not pay particular attention to them.

14. PERICHÆTA GRACILIS, n. sp.

The largest of about 20 specimens comprised about 155 segments, was 110 mm. long, 4 mm. broad, the length of preclitellar region being 11 mm., that of the clitellum 6 mm. Body cylindrical tapering posteriorly less markedly so anteriorly, slightly constricted at the clitellum (in spirit-specimens). After about IX the segments are more or less tri-annulate. Colour when alive a rich dark almost port-wine red above (duller in spirit almost reddish-brown), lighter (yellowish-white) below. Prostomium pear-shaped extending back on the buccal ring for about $\frac{2}{3}$ or more of its width; buccal ring with a median longitudinal ventral groove completely dividing it.

Clitellum well developed, comprising four segments (XIII to XVI), or in younger specimens only partially including XIII; complete all round.

Setæ short, about ·28 mm. long, with a slight enlargement at about $\frac{1}{3}$ from the free tip, the remaining portion somewhat thicker; arranged in two half-series, there being median narrow dorsal and ventral spaces devoid of bristles; all the segments setigerous except the first one and the last three or four. The number of setæ per segment is from 20 to 24, the number on the anterior segments being slightly greater than that elsewhere (one specimen having 24 per segment in front of, and 20 per segment behind the clitellum); they are sometimes at slightly irregular intervals, so that those of the various segments do not form perfectly straight longitudinal rows.

Male pores two, slit-like, on papillæ, the pores well apart on the lateral margins of the ventral surface and about corresponding with the interval between the 2nd and 3rd rows of setæ on each side, and in the line of those of the segment; there is one seta visible on each side on the ventral surface between the pores. The oviducts apparently open to the exterior by a single median pore in front of the line of setæ on XIV. There are three pairs of spermathecal pores between VI and VII, VII and VIII, and VIII and IX, rather lateral in position, and corresponding with the 4th or 5th row of setæ on each side. Dorsal pores after about the 5th segment. Nephridiopores not discernible. The accessory copulatory organs comprise three single pores in the median ventral line between XVI and XVII, XVII and XVIII, and XVIII and XIX; apparently a small single papilla in the middle of XVIII; and a pair of small papillæ also on XVIII just in front of, and in a line with those carrying the male pores; but with the exception of the last their presence is not constant, and some or all of them may be wanting. None of the specimens show any trace of adhesive discs.

The alimentary canal presents nothing remarkable. The pharnyx extends back about as far as IV, and its hinder portion is coated with a white mass consisting of granular cells, while below it in about III is a pair of tufts of glandular tubules which are probably salivary glands; the short œsophagus is followed by the gizzard in VI, contained between the two mesenteries of this segment; the small intestine is devoid of pouch-like diverticula, but in segments XII to XV it is very vascular and the lumen of the intermesenteric portions dilates so as to give them a globular appearance; the large intestine begins in XVII and has no lateral cæca.

There are two pairs of testes, in segments XI and XII, not racemose, each of them a narrow nearly cylindrical smooth white body attached to the anterior mesentery of the containing segment, and with the long axis transverse; the inferior extremities of those of each pair are close to, but independent of each other; then arching round the intestine they nearly touch superiorly in the median line; there are two pairs of ciliated rosettes, a pair in each of segments X and XI; in the specimens dissected the vacant portions of the body-cavity in these two segments were crammed with fully developed spermatozoa probably discharged into them from the testes in the segment immediately succeeding in each case; the posterior portions of the vasa deferentia join the prostatic ducts close up to the prostates, which are a pair of long laterally incised bodies commencing in XVIII and extending back through about the next six segments; there is a long genital duct on each side with a *U*-shaped bend as in *P. australis* but differently disposed, in this case the long leg of the *U* being anterior, and the concavity of the bend turned towards the prostates; in another specimen however they were irregularly *S*-shaped. The two elongate, flattened, stalked ovaries occupy the usual position in XIII, and opposite them are the anterior portions of the oviducts which open separately on the ventral surface of XIV. There are three pairs of spermathecæ in segments VII, VIII, and IX, opening anteriorly; each spermatheca consists of a large pear-shaped or rounded sac with a narrow but distinct stalk from which at the level of its piercing the body-wall is given off a long filiform cæcum or appendage, much crimped otherwise it would be longer than the stalked pouch.

There are very large hearts in X, XI, and XII.

The small tufts of glandular tubules attached to the cœlomic wall are probably the segmental organs.

Hab.—Auburn near Parramatta, N.S.W.

Obs.—Common under logs and pieces of bark after rain.

15. PERICHÆTA BARRONENSIS, n. sp.

Among the worms collected by Mr. Froggatt from North Queensland there are four small specimens apparently young and immature but sufficiently distinct from those of any other species examined by me, to permit of, at any rate, a preliminary description. The largest of them consists of about 125 segments, and is 62 mm. long, and 4 mm. broad. The prostomium is large, the projecting portion being spherical; superiorly it is lightly grooved longitudinally in the middle line, the groove continuing backwards, dividing the buccal ring—which is very narrow—and being visible about as far back as segment XVI, interrupted by the dorsal pores where these are present; all the specimens show it, so that it is probably normal; the buccal ring is also divided longitudinally in the median ventral line.

The body in all the specimens is constricted from about XIII to XVI; the diameter at the extremities is much less, and the anterior one slightly bent upwards. After the first few the segments increase in width for some distance, and are tri-annulate.

Clitellum developed in only one specimen, comprises four segments XIV to XVII, complete all round. Setæ about 40 per segment, not in complete circles; the median ventral break is perfectly distinct; there is no median dorsal row of setæ, and apparently there is a narrow dorsal break, but as the specimens are small and contracted it is difficult to be quite sure. Male pores two, each on a prominent papilla on XVIII, the ventral portion between the papillæ slightly swollen forming a slight ridge across the interval, on which ventrad of each papilla two or three setæ are visible. Oviducal pores not visible. Spermathecal pores three pairs, between IV and V, V and VI, VI and VII, about corresponding with the intervals between the fourth and fifth rows of setæ on each side. Dorsal pores after about IV. No indications of accessory copulatory organs in any of the specimens.

The pharynx occupies three or four segments; the œsophagus is rather long; the gizzard is in VII, or at least has immediately behind it the posterior mesentery of this segment, but in front of it the mesenteries were thin and apparently incomplete and difficult to make out; it pushes backwards several of the mesenteries behind it; the small intestine occupies segments VIII to XVI, is unprovided with diverticula, but in X to XIV, the intermesenteric portions are dilated, especially in XI to XIII; the large intestine commences in XVI, no cæca in XXVI.

There are two pairs of racemose testes in XI and XII, attached to the anterior mesenteries quite independently of each other; two pairs of ciliated rosettes in X and XI, the posterior portions of the vasa deferentia were not discernible; in XVIII a pair of prostates their proximal portions long, narrow, continuous with the genital ducts, looking more like convoluted thick-walled tubes than solid glands, their distal portions a little more compact. The ovaries and oviducts have the usual situation and relations; the external apertures of the latter were not visible; there are three pairs of small spermathecæ, the posterior pair the largest, the anterior pair the smallest, apparently in segments V, VI, and VII; each of them pear-shaped, very shortly stalked, and with a long filiform cæcum slightly longer than the main sac.

The lower and lateral portions of segments X and XI were filled with white masses of spermatozoa, but whether they were lying free, or enclosed with the ciliated rosettes within a membranous sac or sacs, could not be determined. Attached to the anterior mesentery of x on either side of and slightly below the intestine were two smooth bodies looking like a third pair of testes, but probably only encysted parasites, though microscopic examination yielded nothing satisfactory. In other worms I have sometimes met with a similar pair of bodies on the anterior mesentery of XIV.

There are transverse hearts in VII to XIII, very large in XI and XII.

The segmental organs consist of pairs of transversely disposed coiled tubes, smaller and less conspicuous after about segment XVIII.

Hab.—Barron River District near Cairns, N. Queensland (*Macleay Museum*).

Obs.—This species is readily distinguishable from the other two (*P. austrina* and *P. gracilis*), which have three pairs of spermathecæ, by the anterior dorsal grooving, and by the absence of accessory copulatory organs.

16. PERICHÆTA QUEENSLANDICA, n. sp.

(Plate XIII, fig. 6).

The largest of six specimens comprising about 120 segments gave the following measurements :—Length 15 cm., breadth 7 mm., length of the pre-clitellar region 26 mm. Body cylindrical, tapering anteriorly and posteriorly, the ventral surface for a few segments just behind the clitellum somewhat flattened. Prostomium not well shown; apparently small, grooved anteriorly and superiorly, and extending on to the buccal ring for only a short distance—less than $\frac{1}{2}$. The segments are relatively wide and flat, widest from about IV to XIII; in the middle of each segment is a conspicuous transverse ridge carrying the numerous setæ; two furrows one in front of and the other just behind the ridges divide the segments into three annuli, but in addition the first and last of them may show more or less complete further sub-division into two, so that in such cases the segments shew five annuli.

Clitellum thick and well-developed, comprising three segments—XIV to XVI, complete all round; a small elliptical depression on the ventral surface of XIV on which are placed the two apertures of the oviducts; the setæ on the clitellar segments are discernible.

Setæ about ·46 mm. long, with an enlargement at $\frac{1}{3}$ from the free end; forming complete circles, arranged on transverse ridges in the middle of each segment except the first one, and the last few. The number of setæ is tolerably constant throughout and is about 60 per segment; in small specimens a few less. Male pores two, on papillæ on XVIII in the line of setæ, from 4 to 5 mm. apart, with 13 or 14 setæ on the ventral portion of the segment between the pores. The oviducts open on the exterior by two apertures close together, situated on a depression on XIV just in front of the line of setæ. There are four pairs of spermathecal apertures, rather ventral in position, a pair between segments V and VI, VI and VII, VII and VIII, VIII and IX; the pores in a line with about the sixth row of setæ on each side. Dorsal pores after about XII.

The accessory copulatory organs in this species are very well and characteristically developed. Firstly on the ventral surface of each of segments IX, X, and XI (in one case only on X and XI), and in front of the setigerous ridge is a pair of elliptical or circular swollen areas presumably adhesive discs, those of each pair rather close together, and each with a small central pit perhaps carrying a pore. Secondly there are six or seven pairs of accessory-gland pores of which two pairs are in front of the male pores, and four or five pairs behind them, and arranged as follows:—On XVII just in front of the line of setæ is a pair of conspicuous slit-like pores a little closer together than the male pores; the second pair are situated on the junction of XVII and XVIII, just behind the first pair, but a little further apart; the third pair are almost on the junction of XVIII and XIX, the pores of this and of the second pair as far apart as the male pores; the fourth fifth and sixth pairs are on the anterior annuli of segments XIX XX and XXI respectively; when there is a seventh they are on XXII. The last three pairs are closer together even than the first pair; thus while in a good example the pores of the first pair were 2 mm. apart, those of the last two pairs were only 1 mm. apart. In none of the specimens were these pores situated on papillæ (genital or copulatory papillæ), though in the breeding season these are probably developed; but they were placed mostly on elliptical areas, of which those of the second and third pairs were less distinct, and in most of the specimens situated in well marked transverse pits with the papillæ carrying the male pores standing out well between them; this however may be due to shrinkage as in one of the largest specimens there are no pits and the pores are flush with the surface. In a specimen 92 mm. long in which the clitellum was undeveloped, and the adhesive discs only slightly indicated, six pairs of pores were visible, but were not quite so conspicuous as usual.

The alimentary canal differs in several points from what I have met with in the worms with interrupted circles of setæ, though closely agreeing with what has been described in typical perichæte worms from other parts of the world. The pharnyx occupies about three segments; the œsophagus also about three segments, IV to VI, is rather wide, and being constricted at the mesenteries the intermediate portions appear more or less globular, and are coated with a layer of white glandular matter; the gizzard along with the two posterior pairs of spermathecæ occupies VII and VIII, the mesentery between these two segments being completely wanting; the small intestine extends from IX to XIV, and in the next segment gives place to the sacculated large intestine which continues throughout the rest of the body; the intermesenteric portions of the former in X to XIII are dilated and more or less globular, but there are apparently no pouch-like diverticula. The large intestine in XXV is provided with a pair of long lateral cæca tapering anteriorly, such as have been so frequently described in other species of the genus, though usually as being in segment XXVI; the cæca come off from the sides of the canal, lie alongside it, and are directed forwards, their free tips reaching to XXI.

The genitalia also present some slight differences from what I have met with in the worms with incomplete circles of setæ. In XI and XII are two pairs of white sacs, which appear unmistakably to be vesiculæ seminales. The anterior pair are long, nearly cylindrical bodies, their distal portions tapering, slightly adherent to one or both mesenteries, their proximal portions rising from the floor of the segment independently of each other on either side of the nerve cord, then curving round the intestine touching superiorly in the median line. The posterior pair are larger, more compressed, and each distally drawn out into a narrow prolongation usually folded on itself, and slightly dilated at the tip; these bodies are attached by fibrous bands and a stalk to the anterior mesentery of XII, on each side of and slightly below the intestine. I could find no ciliated rosettes either in X or XII, but there is a single pair in XI, enclosed within the backwardly prolonged basal portions of the anterior sacs, which continue along the floor of the segment on either side of the nerve cord to the posterior mesentery, through which apparently the contents of the posterior sacs gain access to the ciliated rosettes. In one specimen I noticed a pair of small white bodies attached to the anterior mesentery of XI, but enclosed within the sacs, which were probably testes. The presence of a single pair of ciliated rosettes—unless I have overlooked a pair which I do not think is the case—is similar to what Horst has described in *P. Sumatrana* (1).

There is a pair of large lobulated prostates incompletely divided into three lobes, occupying part of from two to four segments (XVIII to XXI) on each side; the prostatic ducts come off from the middle portions; the posterior portions of the vasa deferentia were not traceable in the two soft specimens available for dissection; the genital ducts are rather short, straight or bent but not coiled. There is a pair of flattened ovaries occupying the usual position in XIII; the oviducts appeared to be as usual; there are four pairs of spermathecæ, a pair in each of segments V to VIII. Each spermatheca is a stalked pouch, the stalk or duct about half as long as the distal dilated portion, and giving off a very short and rudimentary cæcum from its upper part. The whole ventral wall of the body cavity from segments XVII to XXII is specialised, but separate glandular pouches were not noticeable.

There are transverse hearts in segments VIII to XII; in front of VIII the dorsal vessel runs along the top of the gizzard; there are smaller commissural vessels in VI and VII; in XII below the main

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(1) Notes from the Leyden Museum, Vol. v. p. 189.

dorsal trunk is a second small longitudinal vessel adherent to the alimentary canal, from which the hearts in this segment seem to arise.

The segmental organs are probably the small tufts of glandular tubules attached to the cœlomic wall, most conspicuous in the œsophageal segments where they are also attached to the mesenteries.

Hab.—Barron River District, North Queensland (*Macleay Museum*).

PERICHÆTA DARNLEIENSIS, n. sp.

Two specimens comprising 108 and 79 segments were 155 mm. and 111 mm. long respectively, in both cases the breadth being 6 mm., and the length of the preclitellar region 29 mm. Body cylindrical tapering anteriorly and posteriorly. Prostomium extending back on the buccal ring for about half its width. Segments distinct, rather wide and flat, widest (about 3 mm.) in front of the clitellum as far forwards as about v. From about v to VIII the segments are tri-annulate, with the setæ on a ridge on the middle annulus; from IX to XIII they shew five annuli; in the remaining region the annulation is not quite so distinct but there may be three or five annuli per segment. Segments setigerous after the first or second.

The setæ are about ·42 mm. long, with a slight enlargement at about $\frac{1}{3}$ from the free end; arranged in complete circles on conspicuous ridges on the middle of the setigerous segments. The number of setæ is from about 60 to 66 per segment, most numerous in the posterior region.

Clitellum comprises three segments (XIV to XVI), is very thick and complete all round; a depression on the ventral surface of XIV on which are the oviducal apertures. Neither setæ nor dorsal pores visible on the clitellum.

The male pores are slit-like with plicated lips on XVIII, about 3 mm. apart, in the line of setæ, with about 12 setæ on the ventral surface between the pores. In neither specimen were the pores on papillæ, but the latter are probably developed in the breeding season. The oviducts in one specimen appear to open by separate apertures; in the other the apertures are not visible. There are no traces of accessory copulatory organs, neither adhesive discs nor genital papillæ or pores. There are four pairs of spermathecal pores, circular apertures between V and VI, VI and VII, VII and VIII, VIII and IX; rather lateral in position, and about in a line with the tenth row of setæ on each side. Dorsal pores after XI or XII.

The alimentary canal differs slightly in the position of the gizzard and in one or two other minor points from that of the Queensland perichæte. The pharynx occupies about four segments; the œsophagus reaches from V to VIII, the distal half of the portion in VIII dilated into a crop-like portion in front of the large gizzard lying in segments IX and X, the intervening mesentery being entirely wanting; the small intestine reaches back to XV but gives off no pouch-like diverticula, though in XI and XIII the intermesenteric portions are dilated; the large sacculated intestine begins in XVI, and in XXVI is provided with a pair of long, lateral, tapering cæca, directed forwards and reaching to about XX, but in the natural position the anterior free portions were tucked under the intestine in XXII.

There are two pairs of testes (1) in segments XI and XII, not racemose, occupying the whole width of the segment except for the space occupied by the transverse hearts which lie behind them; divided into two lateral lobes and a small median upper one, all close together in a compact mass overlaying the intestine, those of each pair nearly touching above in the median line; they are attached in each case partly by fibrous bands and partly by a stalk, to the anterior mesenteries a little below and on each side of the intestine. On the floor of X immediately in front of the mesentery between X and XI, there are apparently two bodies contained in a delicate membranous sac; while on the floor of XI beneath the anterior testes is a similar but larger mass. These bodies I take to be the two pairs of ciliated rosettes enclosed in membranous sacs, in relation in some way to the testes on the other side of the mesentery in each case; or there may be one sac enclosing both pairs. The posterior testes

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(1) These bodies, as also in the next case, are possibly vesiculæ seminales.

in XII have nothing of this kind behind them and I was able to see the vasa deferentia passing through the mesentery to which they were attached. There is a pair of much incised prostates occupying nearly three segments, XVII to XIX; the genital ducts which are sickle-shaped and are joined by the distal portions of the vasa deferentia close up to the gland, do not open directly on to the exterior but each on the summit of an elliptical elevation, possibly a sac, nearly as long as the prostate. The whole arrangement is very similar to that figured by Vaillant in *P. cingulata* (1) with this difference, that in the Darnley Island worm both prostates and genital ducts are relatively longer, and the vasa deferentia join the prostatic ducts closer to the glands. I hope to give a figure of these structures later on.

The two ovaries occupy the usual position in XIII; the arrangements of the oviducts I was unable to follow; there are four pairs of spermathecæ in segments VI to IX; each spermatheca consists of a principal pouch and of a cæcum; the former is divided by a constriction into a relatively broad proximal portion or stalk, and a slightly broader nearly cylindrical or depressed distal portion, the whole somewhat pear-shaped; the cæcum is long and narrow, irregularly knobbed or provided with rudimentary blunt processes, of a glistening red colour contrasting with the white pouch, and comes off from the basal portion some distance below the constriction.

In front of the gizzard there are four complete mesenteries; the first one behind is very thick, the next three are also thick, but after those they are quite thin; the thick ones are all concave forwards like saucers, but are not in contact.

There are four pairs of transverse hearts in X to XIII, of which all but the first pair are very large; in some of these segments there is a second longitudinal vessel from which some of the hearts arise.

In segments V and VI tufts of glandular tubules seemingly attached to the posterior mesenteries are especially noticeable; they are perhaps salivary organs. Segmental organs not at all conspicuous.

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(1), Ann. Sci. Nat. Zool. (5), Vol. x, pl. x, fig. 7.

Hab.—Darnley Island, Torres Straits (*Macleay Museum, from the 'Chevert' Expedition*).

PERICHÆTA PEREGRINA, n. sp.

The largest specimen comprising about 108 segments when alive and moderately extended was 19 cm. long; after being not unduly contracted in spirit it was 13 cm. long, 5 mm. broad, the length of the preclitellar portion being 18 mm. Body cylindrical; the segments show only faint indications of division into annuli. Colour above of a nearly uniform brown with a tinge of green, lighter below. Prostomium pear-shaped, depressed, extending well back on the buccal ring (for about $\frac{3}{4}$ of its width).

Clitellum comprising three segments (XIV to XVI), complete all round; on the ventral portion of XIV is a small area different in colour or an elliptical depression carrying the two apertures of the oviducts which are close together. Setæ visible on the clitellum.

Setæ about ·42 m.m. long, with a slight enlargement at $\frac{1}{3}$ from free, end from about 40 to 46 per segment, most numerous in the posterior portion of the body, arranged in complete circles on the setigerous segments, not on such conspicuous ridges as in the other two species. Segments setigerous except the first and the last.

Male pores two, conspicuous transverse slit-like apertures in the line of setæ; with about 14 setæ on the ventral surface between them; in one specimen only were they on papillæ, but probably in the breeding season such are developed. Apertures of oviducts two, close together on XIV. Apertures of spermathecæ four pairs, between segments V and VI, VI and VII, VII and VIII, and VIII and IX, in a line with about the seventh row of setæ on each side. Dorsal pores after XI.

The pharnyx occupies about four segments; the œsophagus occupies V, VI and VII; the gizzard occupies two or two and a half segments (VIII and IX and part of X) the first two of these segments also containing the posterior two pairs of spermathecæ; the mesentery between VIII and IX as also that between IX and X entirely absent, the first complete one behind the gizzard being the anterior of XI. The small intestine extends from the posterior half of X, or XI to XV, and in XVI commences the thin-walled sacculated large intestine; the former in segments XI to XIV has the lumen of the intermesenteric portions dilated, most noticeable in the last two; the latter in XXVI gives off a pair of lateral cæca turned forwards and lying beside the canal in this and the two preceding segments, the distal portions of their free tips being folded backwards otherwise they would reach into XXIII. In a fresh specimen the alimentary canal from the gizzard backwards and the dorsal vessel were coated with orange (so-called hepatic) vasifactive tissue, which is not noticeable in spirit specimens.

Of testes there are two pairs of solid white bodies not racemose, in segments XI and XII, partly attached to the anterior mesenteries of these segments, the lower portions of those of each pair touch, but it is difficult to say whether they are in any way confluent; there are two pairs of ciliated rosettes, a pair in each of segments X and XI just in front of the posterior mesenteries of the segments; those of each pair do not, however, seem to be free in the segmental cavities but to be enclosed within a delicate membranous sac whose relations are difficult to make out, but probably communicating in some way with the testes in the succeeding segments, or perhaps both testes and ciliated rosettes are enclosed in prolongations of the same sac. The two branches of each vas deferens join in XII on each side, and the posterior portions of the vasa join the prostatic ducts quite close to the prostates, which are smooth transversely incised bodies lying in XVIII; the genital duct is *U*-shaped with the concavity of the bend looking outwards and backwards. The ovaries are in XIII as usual, and the oviducts have the normal relations. There are four pairs of spermathecæ in segments VI to IX, opening anteriorly; each spermatheca consists of an elongate somewhat depressed stalked pouch, with a long filiform cæcum with a dilated tip, about as long as the main pouch, given off anteriorly.

There are three pairs of large transverse hearts in XI to XIII; in front of XI the dorsal vessel runs along the top of the gizzard and continues on to the pharnyx.

Hab.—Sydney (believed to be introduced from the Mauritius).

The worms of this species are not uncommon in the soil of pot-plants in Sydney conservatories, bush-houses, and nurseries, and are regarded as a nuisance by horticulturists on account of their interfering with the drainage of the pots. My attention was called to them by Mr. Masters, to whom I am indebted for specimens and for the information that they are not found in garden soil, and by nurserymen are believed to have been brought with plants from Mauritius to one of the Sydney nurseries, whence they have distributed with pot-plants. At present only one species of earthworm is known from Mauritius, *Lampito Mauritii* of Kinberg, but of which Perrier (1) after an examination of Kinberg's specimens says that it it is simply a species of *Perichæta.* (2) Under any circumstances it is different from the worm described above, because Kinberg says of it that the buccal segment is not incised anteriorly, and that the anterior setæ are more numerous (44) than the posterior ones (30-32).

D. *INCERTÆ SEDIS.*

Of the three worms from Percy Island one has the following characters:—Length 92 mm., breadth 6·5 mm., number of segments 144; body flattened slightly from above and nearly elliptical in section, tapering anteriorly; no trace of a clitellum; a pair of small papillæ on XVIII, doubtless carrying the male pores but these are not distinct; on the depression between the papillæ is apparently a single median aperture; setæ very long, arranged in eight rows, four ventral and four lateral, for the most part straight and regular, but in about the posterior third of the body the two outer rows on each side are most irregular, the setæ on some segments being twice as far apart as on others, but not alternating regularly from segment to segment; in the anterior region where the setæ are shorter they project backwards, but in the posterior region they project forwards, more noticeably so in the case of the lateral rows; the apertures of the oviducts and of the spermathecæ as well as nephridiopores are not discernible. The body is lightly grooved in the median dorsal line.

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(1) Comptes Rendus, Tome CII, No. 15, April 1886, p. 876.
(2) Loc. cit. p. 103.

The other species is represented by two specimens of which the largest is 75 mm. long and 5 mm. broad. Both specimens are much shrivelled and contracted, and their characters are difficult to make out. The anterior extremity is very obtuse; the body tapers from before backwards, the diameter being least in the posterior part of it. The fourth segment is bi-annulate, the next four or five are wider and tri-annulate. There is no trace of a clitellum in either case. Setæ in eight rows, forming two ventral and two lateral pairs, those of each pair at equal distances apart, a point in which it differs from any other Australian worm I have yet seen except *Lumbricus*, from which its other characters at once distinguish it. Two pores on papillæ on XVIII, presumably the male pores; these are quite distinct in the large specimen; on the segment in front of, and on the second and fourth segments behind XVIII, there appear to be pairs of pores, but they are so indistinct that it is doubtful whether they really are so. There are two pairs of spermathecal apertures, between VII and VIII and VIII and IX.

Among the worms sent by Mr. Froggatt were two small and immature worms about 60 mm. long and 2 mm. broad; both are rather soft. The clitellum is undeveloped in both. There are eight rows of setæ forming four pairs, two lateral and two ventral, the setæ of the four pairs at equal distances apart. Dorsal pores after about X or XI. On XVIII there are two conspicuous papillæ doubtless carrying the male pores, from which in one specimen there protrude a pair ot long, curved, penial setæ. This worm may be the same species as the foregoing worm from Percy Island, and both may be a species of *Digaster*, but apparently not the same as *D. armifera* in which the setæ of the lateral couples are further apart than are those of the ventral ones.

I am indebted to Dr. Ramsay for a specimen of a large and very fine worm about a foot long from the Richmond, of which as the single speciman is not available for dissection, and its characters cannot be defined without, as well as of some others of which at present my supply of material is insufficient, I hope to give descriptions shortly.

Sufficient evidence has now been offered that earthworms are by no means absent from Australia; and I once more appeal to members of this Society resident in fertile parts of the colony to supply me with information or with specimens.

I have again to thank my friend Mr. R. T. Baker for his trouble in kindly making a number of drawings for me.

EXPLANATION OF PLATE XIII.

List of References.

a.d.	adhesive discs	*p.*	prostate
a.p.	aperture of accessory copulatory organs	*s.*	sac containing penial setæ
cl.	clitellum	♂	male pores
g.d.	genital duct	♀	apertures of oviducts

Fig. 1.—Prostate, genital duct, and sacs containing the penial setæ in *Digaster armifera.*

Fig. 2.—Penial seta (enlarged).

Fig. 3.—Tip of a penial seta (much magnified).

Fig. 4.—Anterior portion of the body of *Perichæta tenax* seen from below, to show the "adhesive discs" &c. (enlarged).

Fig. 5.—Anterior portion of the body of *P. austrinia* seen from below (enlarged).

Fig. 6.—Anterior portion of *P. Queenslandica* seen from below (enlarged).

In figures 4-6 the natural size of the portion figured is indicated by the lines at the side.

Note.—The setæ are not indicated on the clitellar segments in figs. 4 and 5; the lines of demarcation between these segments are a little too distinct. In fig. 6 the papillæ carrying the male pores on xviii do not show as clearly as they ought to.

NOTES AND EXHIBITS.

Mr. Brazier exhibited a handsome specimen of fan-shaped *Retepora phœnicea*, Busk, which had been washed ashore after a gale at the mouth of the Bellinger River. He also exhibited a specimen of *Meretrix lusoria*, Lam., used by the natives of Ysabel Island, Solomon Group, for extracting hairs from the face and body.

Mr. Deane exhibited two eggs, almost quite black, laid by a common duck. He stated that after several eggs were laid, the colour for a time became a little lighter, and the laying ceased, but on recommencing laying the eggs were as black as ever.

Mr. Maiden exhibited a fine specimen of shell-conglomerate from high-water mark at Manly Beach.

Dr. Katz exhibited pure cultivations of the Bacteria mentioned in his paper, and Japanese Isinglass of good quality. He also exhibited several geological hammers, of best cast-steel, from a Westphalian manufactory.

Mr. Smithurst exhibited a fine slab of shale crowded with impressions of ferns, from the Upper Coal Measures at Wallsend; also a hollow ironstone nodule from the same district, and a specimen of fossil Polyzoa from Heywood, Victoria.

Dr. Cox exhibited two living specimens of *Helix* (*Rhagada*) *Kooringensis*, sent to him by post from about 30 miles N.E. from the Burra Burra Copper Mines, S.A. This peculiar species was described by Angas (P.Z.S. 1877, p. 33), and is closely allied to *H. Silveri*, Angas, differing in a very striking manner from any of the other numerous Helices found in Australia. Dr. Cox also shewed an interesting old work of date 1777 entitled "Catalogue of the different specimens of cloth collected in the three voyages of Captain Cook to the S. Hemisphere, &c., illustrated with samples of the cloth."

Mr. Fletcher exhibited specimens of the nine species of earthworms described by him, in addition to examples of several species of which an insufficient supply of material does not at present admit of satisfactory description.

Mr. Ogilby exhibited a specimen of *Monacanthus maculosus*, Rich., obtained off Cockatoo Island, and stated that the Australian Museum had not hitherto possessed a specimen; it was presented to that Institution by the Hon. W. Macleay. He also exhibited a parasitic Entomostracon from the Mackerel, belonging to the genus *Lerneonema.*

Mr. Whitelegge exhibited a collection of Foraminifera from the waters of Port Jackson. There were no new forms of importance.

The President exhibited the fossil from Cockatoo Island, mentioned in his paper, and a similar one from Stuttgart, Württemberg, with full-size photographs of each.

The President exhibited, for Dr. Woolls, the plants referred to in his note.

WEDNESDAY, 27TH OCTOBER, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

The President announced that two excursions had been arranged for the ensuing month :—

(1.) November 6th.—Members to meet at the Redfern Railway Station, to proceed by the 8·30 a.m. train to Hornsby. Professor Stephens in charge.

(2.) November 13th.—Members to meet at No. 4 Jetty, Circular Quay, at 10 o'clock a.m., to proceed to Middle Harbour. The Hon. W. Macleay in charge. Steamer and Refreshments will be provided. In order to facilitate arrangements, Members intending to be present are requested to notify the same to the Director by the preceding Thursday.

DONATIONS.

"Report on the Fusicladiums (Black Spot, Scab, and Mildew diseases), the Codlin Moth, and certain other fungus and insect pests attacking apple and pear trees in South Australia." By Frazer S. Crawford. From the Hon. the Commissioner of Crown Lands, Adelaide.

"Journal of the Royal Microscopical Society of London." Ser. II. Vol. VI. Part 4, August, 1886. From the Society.

"Catalogue of Books in the Library of the University of Sydney." From the Registrar.

"Melbourne University Calendar for 1886." From the Registrar, Melbourne University.

"Catalogue of the Parliamentary Library of South Australia, 1885 ;" "Supplementary Catalogue of Books added to the Library from June 1st, 1885, to July 31st, 1886." From the Librarian.

"Abstracts of Proceedings of the Royal Society of Tasmania." September 13th and October 11th, 1886. From the Society.

"Annual Reports of the Department of Mines, New South Wales, for the years 1884, 1885." From the Under Secretary for Mines.

"Illustrations of Typical Specimens of Lepidoptera Heterocera in the Collection of the British Museum." Part VI. By A. G. Butler; "Catalogue of Fossil Mammalia in the British Museum (Natural History.)" Part III.; "Catalogue of Birds in the British Museum." Vol. XI.; "Mineral Department. An Introduction to the Study of Meteorites, with a list of the Meteorites represented in the Collection." From the Trustees.

"Geological Survey of Victoria. Report of Progress with Reports on the Geology, Mineralogy, and physical structure of various parts of the Colony." Nos. II.-VII., 1875-1884; "Prodromus of the Palæontology of Victoria; or figures and descriptions of Victorian Organic Remains." By Professor McCoy, F.R.S. Decades IV., VI., and VII.; "Observations on new Vegetable Fossils of the auriferous drifts." By Baron Ferd. von Mueller, K.C.M.G., M.D., Ph.D., &c. Decades I. and II.; "Irrigation Reports prepared at the instance of the Royal Commission of Water Supply, Melbourne;" "Report of the Board appointed to report on the method of treating Pyrites, &c.;" "Annual Report of the Acting Secretary for Mines and Water Supply for the year 1884;" "Geological Maps—Victoria including Tasmania; Ballarat, Ararat, Sandhurst and Stawell Goldfields; Cape Otway District, Learmonth District; Cape Patterson Coalfields; Creswick, Beechworth, Mitchell River and Russell's Creek Goldfields;" Also, "Map showing distribution of Forest Trees in Victoria." From the Hon. the Secretary for Mines, Victoria.

"Reference List of the Tertiary Fossils of Tasmania." By R. M. Johnson, F.L.S. From the Author.

"Journal and Proceedings of the Royal Society of New South Wales for 1885." From the Society.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CIII., Nos. 2-6, 1886. From the Academy.

"Journal of Conchology." Vol. V., No. 3, July, 1886. From the Conchological Society of Great Britain and Ireland.

"Monatliche Mittheilungen aus dem Gesammtgebiete der Naturwissenschaften." Jahrg. IV., Nos. 2 and 3, May and June, 1886. From the Naturwissenschaftlichen Verein des Regierungsbezirkes Frankfurt.

"Proceedings of the Queensland Branch of the Geographical Society of Australia." 1st Session 1885-6. Vol. I. From the Society.

"Objects of the New South Wales Mining Institute." From the Institute.

"Feuille des jeunes Naturalistes." No. 191, September, 1886. From the Editor.

"Zoologischer Anzeiger." Jahrg. IX., No. 231. From the Editor.

"Victorian Naturalist." Vol. III., No. 6, October, 1886. From the Field Naturalists' Club of Victoria.

"An Act to establish Sanitary Regulations in respect to the Production and Distribution of Milk." (Assented to 30th Sept., 1886.) From the Board of Health, Sydney.

"Bulletin of the American Museum of Natural History." Vol. I., No. 7, July, 1886. From the Director.

"Descriptions and Illustrations of the Myoporinous Plants of Australia. II. Lithograms." By Baron Ferd. von Mueller, K.C.M.G., M.D., Ph.D., &c. From the Premier of Victoria through the Principal Librarian, Melbourne Public Library.

"Report of the Board of Governors of the Public Library, Museum and Art Gallery of South Australia, with the Reports of the Standing Committees, 1885-6." From the General Director and Secretary.

"The Catalogue of the Public Library of Victoria." Two vols. From the Trustees.

"Proceedings of the Royal Society of London." Vol. XXXVIII. No. 238; Vol. XXXIX. Nos. 239-241; Vol. XL. Nos. 242-244, January, 1885 to April, 1886. From the Society.

"Proceedings of the Zoological Society of London for the year 1886." Part 2; "Transactions." Vol. XII., Part 3, 1886. From the Society.

"Memoirs of the Geological Survey of India. Palæontologia Indica." Ser. XIV. Vol. I., Part 3, Fasc. 6. From the Director.

CATALOGUE OF THE DESCRIBED COLEOPTERA OF AUSTRALIA.

BY GEORGE MASTERS.

PART VI.

Family. SCOLYTIDÆ.

HYLESINUS. Fabricius.

5625 PORCATUS Chap. Synops. Mém. Soc. Roy. Sc. Liége, 1869, p. 87.
Australia.

CRYPHALUS. Erichson.

5626 PILOSELLUS Erichs. Wiegm. Arch. 1842, I. p. 212.
Tasmania.

5627 SIDNEYANUS Nördling. Nachtrag zu Ratzeb. Forstins. 1856, p. 75 ; Ferr. Berl. Zeit. 1868, p. 251.
N. S. Wales.

5628 WAPLERI Eichh. Berl. Zeit. 1871, p. 131.
Australia.

XYLEBORUS. Eichhoff.

5629 SOLIDUS Eichh. Berl. Zeit. 1868, p. 151.
Australia.

TOMICUS. Latreille.

5630 TRUNCATUS Erichs. Wiegm. Arch. 1842, I. p. 212.
Tasmania.

PLATYPUS. Herbst.

5631 AUSTRALIS Chap. Mon. Mém. Liège, XX. 1866, p. 142.
Moreton Bay, Queensland.

5632 CRENATUS Chap. Mon. Mém. Liége, XX. 1866, p. 287, f. 177.
Moreton Bay, Queensland.

5633 GEMINATUS Chap. Mon. Mêm. Liége, XX. 1866, p. 239, f. 141.
Australia.

Family. BRENTHIDÆ.

CYPHAGOGUS. Parry.

5634 ODEWAHNI Pascoe, Proc. Ent. Soc. 1864, p. 46.
S. Australia.

CEROBATES. Schönherr.

5635 AUSTRALASIÆ Fairm. Ann. Soc. Ent. Fr. 1881, p. 463.
Australia.

IONTHOCERUS. Lacordaire.

5636 OPHTHALMICUS Pascoe, Ann. Nat. Hist. 1872, p. 320, t. 15, f. 4.
Wide Bay, Rockhampton, &c., Queensland.

TRACHELIZUS. Schönherr.

5637 HOWITTI Pascoe, Ann. Nat. Hist. 1872, p. 320.
Melbourne, Victoria.

CORDUS. Schönherr.

5638 ACUTIPENNIS Power, Ann. Soc. Ent. Fr. 1878, p. 483.
Australia.

5639 HOSPES Germ. Linn. Ent. III. 1848, p. 209.
Australia. (Widely distributed).

5640 PASCOEI Power, Ann. Soc. Ent. Fr. 1878, p. 484.
Australia.

5641 SCHONHERRI Power, Ann. Soc. Ent. Fr. 1878, p. 483.
Australia.

AMORPHOCEPHALUS. Schönherr.

5642 Australis Lacord. Gen. Col. VII. p. 423, note 2.
Moreton Bay, &c., Queensland.

5643 Mniszechi Power, Ann. Soc. Ent. Fr. 1878, p. 487,
Cape York, N. Australia.

5644 sulcicollis Pascoe, Ann. Nat. Hist. 1872, p. 321.
W. Australia.

ECTOCEMUS. Pascoe.

5645 pterygorrhinus Gestro, Ann. Mus. Civ. Genov. VIII. 1876, p. 519.
Northern Queensland.

CEOCEPHALUS. Schönherr.

5646 internatus Pascoe, Ann. Nat. Hist. 1872, p. 324.
Queensland.

5647 tenuitarsis Pascoe, Ann. Nat. Hist. 1872, p. 324,
Illawarra, N. S. Wales.

SCHIZOTRACHELUS. Lacordaire.

5648 dichrous Lacord. Gen. Col. VII. p. 266.
Moreton Bay, Queensland.

LEPTORRHYNCHUS. Guérin.

5649 Hollandiæ Boisd. Voy. Astrol. II. 1835, p. 315, (gen. dub.).
Australia.

Family. ANTHRIBIDÆ.

BYTHOPROTUS. Pascoe.

5650 lineatus Pascoe, Ann. Nat. Hist. (3), IX. p. 467.
Lizard Island, N. E. Australia.

ANCYLOTROPIS. Jekel.

5651 Waterhousei Jekel, Mon. p. 96, t. 2, f. 7; Lacord. Gen. Atl. VIII. t. 78, f. 7, a.
N. S. Wales, and Queensland.

GENETHILA. Pascoe.

5652 RETUSA Pascoe, Ann. Nat. Hist. (3), V. p. 41, t. 1.
Moreton Bay, Queensland.

MACROTRICHIUS. Motschulsky.

5653 NIVEINASUS Mots. Bull. Mosc. 1874, XLVIII. (2), p. 232.
N. Australia.

XENOCERUS. Schönherr.

5654 LEUCOGRAMMUS Mots. Bull. Mosc. 1874, XLVIII, (2), p. 238.
N. Australia.

ETHNECA. Pascoe.

5655 BAKEWELLI Pascoe, Ann. Nat. Hist. (3), V. p. 40, t. 1.
Melbourne, Victoria.

TROPIDODERES. Schönherr.

5656 ALBUGINOSUS Erichs. Wiegm. Arch. 1842, I. p. 184.
Tasmania.

5657 MUSIVUS Erichs. Wiegm. Arch. 1842, I. p. 184.
Tasmania.

DOTICUS. Pascoe.

5658 PALMARIS Pascoe, Ann. Nat. Hist. (5), IX. p. 27; C. O. Waterh. Aid, II. t. CIV.
Queensland.

ECELONERUS. Schönherr.

5659 ALBOPICTUS Pascoe, Journ. of Ent. I. 1860, p. 58, t. 2. f. 3.
N. S. Wales, and Queensland.

5660 INSULARIS Fahrs. Schh. Gen. Curc. V. p. 165.
Swan River, W. Australia.

5661 SUBFASCIATUS Fahrs. Schh. Gen. Curc. V. p. 164; Jekel, Ins. Saund. I. t. 2, f. 6.
Australia. (Widely distributed).

BASEOTROPIS. Jekel.

5662 INGRATA Pascoe, Ann. Nat. Hist. (3), IV. 1859, p. 433.
Port Essington, N. Australia.
5663 PEREGRINA Pascoe, Ann. Nat. Hist. (3), IV. 1859, p. 432.
Port Essington, N. Australia.
5664 SOLITARIA Pascoe, Journ. of Ent. I. 1860, p. 61.
Moreton Bay, Queensland.

OZOTOMERUS. Perroud.

5665 WATERHOUSEI Pascoe, (Dipieza), Ann. Nat. Hist. (3), IV. 1859, p. 332 ; 1860, t. 2.
Moreton Bay, Wide Bay, &c., Queensland.

PHLŒOBIUS. Schönherr.

5666 GIGAS Fabr. Syst. Ent. p. 63.
griseus Fabr. Syst. Ent. I. (2), p. 377 ; Oliv. Ent. IV. 80, p. 9. t. 1, f. 10; Boisd. Voy. Astrol. 1835, p. 298; Montrouz. Ann. Soc. Agr. Lyon, VII, p. 45.
Australia.

CRATOPARIS. Schönherr.

5667 CALLOSUS Gyll. Schh. Gen. Curc. I. p. 136.
Australia.
5668 CERODERES Bohem. Schh. Gen. Curc. VIII. (2), p. 352.
Australia.

EUCIODES. Pascoe.

5669 SUTURALIS Pascoe, Journ. of Ent. II. p. 493.
S. Australia.

ARÆOCERUS. Schönherr.

5670 FASCICULATUS Degeer, Ins. V. 1775, p. 276, t. 16, f. 2.
var. *sambucinus* Boisd. Voy. Astrol. II. p. 299 (forte) ; W. S. Macleay, Dej. Cat. 3 ed. p. 259.
Australia.

Family. BRUCHIDÆ.

BRUCHUS. Linné.

5671 QUADRIGUTTATUS Bohem. Nouv. Mém. Mosc. I. 1829, p. III; Schh. Gen. Curc. I. p. 74.
Australia.

Family. CERAMBYCIDÆ.

Sub-Family. PRIONIDES.

SCELEOCANTHA. Newman.

5672 GLABRICOLLIS Newm. Ann. Nat. Hist. V. 1840, p. 15.
N. S. Wales.

5673 PILOSICOLLIS Hope, Trans. Ent. Soc. (1), I. 1834, p. 16, t. 2, f. 1.
K. G. Sound, W. Australia.

MIOCYDUS. Pascoe.

5674 PRIONOIDES Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 60, t. 8, f. 9.
W. Australia.

XIXUTHRUS. Thomson.

5675 NYCTICORAX Thoms. Bull. Soc. Ent. Fr. (5), VII. 1877, p CLIV.
N. Queensland.

PRIONUS. Geoffroy.

5676 DIMIDIATUS White, Longic. VII. (1), 1853, p. 18.
Australia.

CATYPNES. Pascoe.

5677 MACLEAYI Pascoe, Journ. of Ent. II. p. 244.
Northern parts of N. S. Wales.

MACROTOMA. Serville.

5678 CNEMOPLITOIDES Thoms. Rev. Mag. Zool. (3), V. 1877, p. 271.
Australia.

5679 PAPYRIA Pascoe, Journ. of Ent. II. 1864, p. 244.
S. Australia ?

5680 SERVILIS Pascoe, Journ. of Ent. II. 1863, p. 49.
Victoria.

AGRIANOME. Thomson.

5681 GEMELLA Pascoe, Trans. Ent. Soc. (2), V. 1859, p. 15.
N. S. Wales, and Queensland.

EURYNASSA. Thomson.

5682 AUSTRALIS Boisd. Voy. Astrol. II. 1835, p. 465; d'Urville, Dej. Cat. 3 ed. p. 342; Lacord. Gen. Col. 1869, p. 111, nota 1, et. p. 114, nota.
Australia.

5683 FIGURATA Pascoe, (Mallodon), Trans. Ent. Soc. Lond. (2), V. 1859, p. 14.
N. S. Wales, and Queensland.

5684 ODEWAHNI Pascoe, (Mallodon), Journ. of Ent. II. 1864, p. 242.
S. Australia.

5685 SERVILLEI Thoms. Syst. Ceramb. p. 304; Lacord. Gen. Col. 1869, p. 110, nota 2.
Australia.

TEISPES. Thomson.

5686 DORSALIS Thoms. Syst. Ceramb. 1864, p. 305.
Australia.

ASPECTROGASTER. Thomson.

5687 FLAVIPILIS Thoms. Rev. Mag. Zool. (3), V. 1877, p. 277.
Australia.

CNEMOPLITES. Newman.

5688 AUSTRALIS Erichs. Wiegm. Arch. 1842, I. p. 208.
Tasmania.

5689 CEPHALOTES Pascoe, (Mallodon), Journ. of Ent. II. 1864, p. 242 ; Lacord. Gen. Col. 1869, p. 114, nota 1.
Queensland.

5690 EDULIS Newm. Entomologist, 1842, p. 351.
Victoria.

5691 IMPAR Newm. Zoologist, 1844, p. 415.
Kangaroo Island, S. Australia.

5692 INSULARIS Hope, Proc. Ent. Soc. Lond. 1841, p. 48 ; Ann. Nat. Hist. IX. 1842, p. 428.
Port Essington, N. Australia.

5693 SPINICOLLIS W. S. Macleay, King's Survey, App. II. 1827, p. 449 ; Newm. Entomol p. 352.
Clarence River, &c., N. S. Wales.

DIOCLIDES. Thomson.

5694 PRIONOIDES Thoms. Syst. Ceramb. 1864, p. 303.
Salt River, &c., W. Australia.

ANALOPHUS. C. O. Waterhouse.

5695 PARALLELUS C. O. Waterh. Ann. Nat. Hist. (4), XIX. 1877, p. 423.
Queensland.

MALLODON. Serville.

5696 STIGMOSUS Newm. Ann. Nat. Hist. V. 1840, p. 15.
Australia.

NOTHOPHYSIS. Serville.

5697 LUCANOIDES Serv. Ann. Soc. Ent. Fr. 1832, p. 159 ; Lacord. Gen. Atl. IX. t. 82, f. 5.
S. Australia

BREPHILYDIA. Pascoe.

5698 JEJUNA Pascoe, (Mallodon), Journ. of Ent. II. 1871, p. 243 ; Ann. Nat. Hist. 1871, p. 269, t. 13, f. 6 ; Thoms. Rev. Mag. Zool. (3), V. p. 277.
Richmond River, &c., N. S. Wales.

DORX. Newman.

5699 PENTAMERA Newm. Ann. Nat. Hist. V. 1840, p. 16.
Australia.

PITHANOTES. Newman.

5700 FALSA Newm. Ann. Nat. Hist. V. 1840, p. 16; Lacord. Gen. Col. 1869, p. 64, nota 1.
Australia.

TOXEUTES. Newman.

5701 ARCUATUS Fabr. Mant. Ins. I. p. 129; Oliv. Ent. IV 66, p. 34, t. 10, f. 38; Newm. Ann. Nat. Hist. V 1840, p. 15.
curvus Gmel. ed. Linn. I. 4, p. 1817.
Tasmania.

5702 PUNCTATISSIMUS Thoms. Bull. Soc. Ent. Fr. (5), VII. p. CLV.
Australia.

ELAPTUS. Pascoe.

5703 BREVICORNIS Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 60, t. 8, f. 8.
Gawler, S. Australia.

5704 SIMULATOR Pascoe, Ann. Nat. Hist. (3), XIX. 1867, p. 413.
Northern Australia.

ENNEAPHYLLUS. Thomson.

5705 ÆNEIPENNIS Thoms. Rev. Mag. Zool. (3), V. 1877, p. 257.
Tasmania.

RHIPIDOCERUS. Westwood.

5706 AUSTRALASIÆ Westw. Trans. Ent. Soc. (1), III. p. 70, t. 3, f. 5.
N. S. Wales, and Southern Queensland.

IOTHERIUM. Pascoe.

5707 METALLICUM Newm. Ent. Mag. V. 1838, p. 493; Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 569.
Tasmania, N. S. Wales, and Victoria.

PHAOLUS. Pascoe.

5708 **Macleayi** Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 569, t. 13, f. 3.
N. S. Wales.

Sub-Family. CERAMBYCIDES.

XYSTROCERA. Serville.

5709 **Australasiæ** Hope, Proc. Ent. Soc. 1841, p. 49; Ann. Nat. Hist. IX. 1842, p. 429.
P. Essington, N. Australia.

5710 **virescens** Newm. Ann. Nat. Hist. V. 1840, p. 19.
N. S. Wales, Queensland, and Victoria.

HAMMATOCHÆRUS. Serville.

5711 **Australasiæ** Hope, Proc. Ent. Soc. Lond. 1842, p. 48.
P. Essington, N. Australia.

SAPORÆA. Thomson.

5712 **femoralis** Thoms. Rev. Mag. Zool. (3), VI. 1878, p. 11.
Australia.

CERAMBYX. Linné.

5713 **lativitta** Newm. Zool. App. p. 115, (gen. dub.).
Australia.

5714 **pullus** Newm. Zool. App. 1850, p. 228.
Australia.

5715 **subserratus** Newm. Zool. App. 1850, p. 116, (gen. dub.).
Australia.

PACHYDISSUS. Newman.

5716 **nubilus** Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 558.
S. Queensland.

5717 **picipennis** Germ. Linn. Ent. III. 1848, p. 225.
S. Australia.

5718 **sericus** Newm. Ent. Mag. V. p. 494.
turbinaticornis Germ. Linn. Ent. III. p. 224.
N. S. Wales, S. Australia, and Victoria.

PHACODES. Newman.

5719 DISTINCTUS Pascoe, Journ. of Ent. II. 1865, p. 373.
S. Australia.

5720 ELUSUS Pascoe, Journ. of Ent. II. 1865, p. 373.
S. Australia.

5721 ESSINGTONI Hope, Proc. Ent. Soc. Lond. 1841, p. 49; Ann. Nat. Hist. IX. 1842, p. 429.
Port Essington, N. Australia.

5722 FERRUGINEUS Pascoe, Journ. of Ent. II. 1863, p. 238.
S. Australia.

5723 FUSCUS Pascoe, Journ. of Ent. II. 1865, p. 373.
S. Australia.

5724 LONGICOLLIS Pascoe, Ann. Nat. Hist. (4), VIII. 1871, p. 270.
Wide Bay, Queensland.

5725 MOSSMANNI Newm. Zool. 1850, App. p. 124.
S. Australia.

5726 OBSCURUS Fabr. Mant. Ins. I. p. 151; Oliv. Ent. IV. (70), p. 9, t. 4, f. 45; Newm. Entom. p. 418: Blanch. Voy. Pôle Sud, IV. p. 271, t. 17, f. 13.
lentiginosus Newm. Entom. p. 7, olim.
Tasmania, S. Australia, Victoria, N. S. Wales.

5727 TENUITARSIS Pascoe, Ann. Nat. Hist. 1871, p. 270.
Nicol Bay, W. Australia.

OEBARINA. Pascoe.

5728 CERESIOIDES Pascoe, Journ. Linn. Soc. IX. 1866, p. 106.
S. Australia.

5729 TRISTIS Pascoe, Journ. Linn. Soc. IX. 1866, p. 105.
S. Australia.

AESIOTYCHE. Pascoe.

5730 FAVOSA Pascoe, Journ. of Ent. II. p. 370, t. 16, f. 3.
N. S. Wales, S Australia, and Victoria.

HYPERMALLUS. Lacordaire.

5731 ATOMARIUS Drury, Ill. II. 1773, Ind. I. p. 93, t. 41, f. 6; Lec. Journ. Ac. Phil. (2), II. p. 177.
var. *bispinosus* Pascoe, (Thersalus), Trans. Ent. Soc. Lond. (3), I. 1863, p. 562; Lacord. Gen. Col. 1869, p. 303, et nota 1.
Australia? (Probably introduced).

PHORACANTHA. Newman.

5732 ACANTHOCERA Hope, (Stenochorus), Trans. Zool. Soc. III. (2), 1843, p. 193.
Australia.

5733 CRUCIGERA Hope, (Stenochorus), Proc. Ent. Soc. Lond. 1841, p. 48; Ann. Nat. Hist. IX. 1842, p. 248.
Port Essington, N. Australia.

5734 FALLAX Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 549.
Australia, and Tasmania. (Widely distributed).

5735 FLAVOPICTA Pascoe, Journ. of Ent. II. 1865, p. 371.
S. Australia.

5736 GIGAS Hope, (Stenochorus), Trans. Zool. Soc. III. (2), 1843, p. 190, t. 12, f. 5.
W. Australia?

5737 GRACILIS Perroud, Ann. Soc. Linn. Lyon, 1855, II. p. 369.
Tasmania.

5738 HOSPITA Pascoe, Journ. of Ent. II. 1863, p. 232.
Queensland.

5739 IMBELLIS Newm. Entomol. 1842, p. 352.
Victoria.

5740 IMPAVIDA Newm. Zool. App. 1850, p. 114.
N. S. Wales.

5741 LATA Hope, (Stenochorus), Trans. Zool. Soc. III. (2), p. 190.
Swan River, W. Australia.

5742 OBSCURA Don. Epitom. Ins. N. Holl. 1805, t. 6, f. 8; Boisd. Voy. Astrol. II. p. 476; Pascoe, (Diospides), Journ. Linn. Soc. IX. p. 99.
N. S. Wales, and Queensland.

5743 PUNCTATA Don. Epitom. Ins. N. Holl. 1805, t. 6, f. 5; Boisd. Voy. Astrol. II. p. 475; Montrouz. Ann. Soc. Ent. Fr. 1861, p. 276.

N. S. Wales, and Victoria.

5744 QUINARIA Newm. Entomol. 1841, p. 3.

S. Australia, and Victoria.

5745 RECURVA Newm. Entomol. 1841, p. 4; Germ. Linn. Ent. III. p. 226.

semipunctata Boisd. Voy. Astrol. II. p. 476.

Australia. (Widely distributed).

5746 SEMIPUNCTATA Fabr. Syst. Ent. p. 180; Don. Epit. Ins. N. Holl. t. 6, f. 6; Oliv. Ent. IV. 67, p. 38, t. 2, f. 19; Hope, Proc. Zool. Soc. 1840, p. 48; Trans. Zool. Soc. III. (2), 1843, p. 192.

inscripta Germ. Linn. Ent. III. p. 226.

Australia. (Widely distributed).

5747 SYNONYMA Newm. Ann. Nat. Hist. V. 1840, p. 19.
punctata Kirby, Trans. Linn. Soc. XII. p. 470.
Australia.

5748 TRICUSPIS Newm. Entomol. 1841, p. 3.
robusta Germ. Linn. Ent. III. p. 225.
var. *gigas* Angas, South Austral. Ill. t. 50, f 21.
N. S. Wales, S. Australia, and Victoria.

5749 TRIMACULATA Hope, Trans. Zool. Soc. III. (2), 1843, p. 191, t. 12, f. 9.

Swan River, W. Australia.

5750 TUNICATA W. S. Macleay, King's Survey, II. 1827, App. p. 451; Hope, Trans. Zool. Soc. III. (2), 1843, p. 194.
Australia.

5751 VICINA Hope, Proc. Ent. Soc. Lond. 1841, p. 48; Ann. Nat. Hist. IX. 1842, p. 248.

Port Essington, N. Australia.

TRYPHOCHARIA. Pascoe.

5752 HAMATA Newm. Entomol. 1841, p. 3; Erichs. Wiegm. Arch. 1842, II. p. 247; Pascoe, Journ. Linn. Soc. IX. p. 99.
longipennis Hope, Trans. Zool. Soc. III. (2), p. 190.
N. S. Wales, and Victoria.

5753 MASTERSI Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 61.
N. S. Wales, and Victoria.

5754 MITCHELLI Hope, Trans. Zool. Soc. III. (2), p. 191, t. 12, f. 8.
N. S. Wales, and Queensland.

5755 ODEWAHNI Pascoe, Journ. of Ent. II. p. 231, t. 4, f. 7.
S. Australia.

5756 SUPERANS Pascoe, Journ. of Ent. I. 1862, p. 357.
Tasmania.

XYPETA. Pascoe.

5757 GRALLARIA Pascoe, Journ. of Ent. II. 1863, p. 231; Journ. Linn. Soc. IX. p. 100, t. 4, f. 2.
Queensland.

EPITHORA. Pascoe.

5758 ANGUSTATA Boisd. Voy. Astrol. II. 1835, p. 475; Hope, Trans. Zool. Soc. III. (2), 1843, p. 192; Pascoe, Journ. Linn. Soc. IX. 1866, p. 98.
Australia.

5759 DORSALIS W. S. Macleay, King's Survey, II. App. p. 451; Newm. Entomol. 1841, p. 3; Hope, Proc. Zool. Soc. 1840, p. 49; Trans. Zool. Soc. III. (2), p. 193.
var. *elongata* Boisd. Voy. Astrol. II. p. 478; Casteln. Hist. Nat. II. p. 424; Dej. Cat. 3 ed. p. 352.
var. *rhombifera* Hope, Trans. Zool. Soc. III. (2), p. 194.
var. *uniguttata* Hope, Trans. Zool. Soc. III. (2), p. 193, t. 12, f. 7; W. S. Macleay, Dej. Cat. 3 ed. p. 352.
Australia. (Widely distributed).

5760 UNDULATA Hope, Trans. Zool. Soc. III. (2). 1843, p. 192.
rubripes Hope, Trans. Zool. Soc. III. (2), 1843, p. 194, t. 12, f. 4; Lacord. Gen. Col. 1869, p. 306, nota 2.
Australia.

ATESTA. Pascoe.

5761 ANGASI Pascoe, Journ. of Ent. II. 1863, p. 233.
S. Australia.
5762 BALTEATA Pascoe, Journ. of Ent. II. 1863, p. 233.
S. Australia.
5763 BIFASCIATA Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 552, t. 4, f. 5.
N. S. Wales, and Victoria.

ALLOTISIS. Pascoe.

5764 DISCRETA Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 551; Journ. Linn. Soc. IX. t. 3, f. 1.
N. S. Wales.
5765 SCITULA Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 551.
Port Denison, &c., Queensland.
5766 UNIFASCIATA Hope, Trans. Zool. Soc. III. (2), 1843, p. 195, t. 12, f. 6.
Australia.

COPTOCERCUS. Hope.

5767 ABERRANS Newm. Entomol. 1841, p. 4.
N. S. Wales, Queensland, and Victoria.
5768 BIGUTTATUS Donov. Epit. Ins. N. Holl. 1805, t. 6, f. 7; Newm. (Callirhoë), Entomol. 1841, p. 3; Hope, Proc. Zool. Soc. 1840, p. 51; Trans. Zool. Soc. III. (2), 1843, p. 195; Pascoe, Trans. Ent. Soc. Lond. (3), III. 1869, p. 535.
tessellatus Latr. Dej. Cat. 3 ed. p. 352.
var. *sexmaculatus* Hope, Trans. Zool. Soc. III. (2), p. 195.
var. *senio* Newm Entomol. 1841, p. 4; Erichs. Wiegm. Arch. 1842. II. p. 247.
Australia. (Widely distributed).

5769 DECORUS Perroud, Ann. Soc. Linn. Lyon, II. 1855, p. 371.
Australia.

5770 PEDATOR Pascoe, Journ. of Ent. II. 1863, p. 232.
S. Australia.

5771 POLITUS Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 550.
Rockhampton, Port Denison, &c., Queensland.

5772 PUBESCENS Pascoe, Trans. Ent. Soc. Lond. (3), I. 1863, p. 550.
N. S. Wales, and S. Australia.

5773 RUBRIPES Boisd. Voy. Astrol. II. 1835, p. 477.
allapsus Newm. Entomol. 1841, p. 4; Blanch. Voy. Pôle Sud, IV. p. 261, t. 16, f. 3; Erichs. Wiegm. Arch. 1842, II. p. 247; Lacord. Gen. Atl. IX. t. 86, f. 3.
assimilis Hope, Trans. Zool. Soc. III. (2), 1843, p. 193.
Roei Hope, Trans. Zool. Soc. III. (2), 1843, p. 194.
Australia. (Widely distributed).

DEMELIUS. C. O. Waterhouse.

5774 SEMIRUGOSUS C. O. Waterh. Ent. Month. Mag. XI. 1874, p. 127.
Queensland.

THORIS. Pascoe.

5775 EBURIFERA Pascoe, Ann. Nat. Hist. 1867, p. 317.
Queensland.

DIDYMOCANTHA. Newman.

5776 BREVICOLLIS Pascoe, Journ. Linn. Soc. Zool. IX. p. 100.
S. Australia.

5777 OBLIQUA Newm. Ann. Nat. Hist. V. 1840, p. 20.
varicornis Hope, Proc. Zool. Soc. 1840, p. 54; Trans. Zool. Soc. III. (2), 1843, p. 199.
N. S. Wales, and Queensland.

ECTINOPE. Pascoe.

5778 SPINICOLLIS Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 61, t. 8, f. 3.
Sydney, N. S. Wales.

SISYRIUM. Pascoe.

5779 DORSALE Pascoe, (Obrium), Journ. of Ent. II. 1863, p. 237.
S. Australia.

5780 IBIDIONOIDES Pascoe, (Obrium), Trans. Ent. Soc. (2), V. 1859, p. 26.
N. S. Wales.

5781 STIGMOSUM Pascoe, (Igenia), Journ. Linn. Soc. Zool. IX. p. 95, t. 3, f. 3.
S. Australia.

5782 TRIPARTITUM Pascoe, (Obrium), Journ. of Ent. II. p. 238; Journ. Linn. Soc. IX. t. 4, f. 4.
S. Australia.

PSYLACRIDA. Thomson.

5783 GRACILIS Thoms. Rev. Mag. Zool. (3), VI. 1878, p. 17.
Australia.

CLEISTIMUM. Thomson.

5784 VENATUM Thoms. Rev. Mag. Zool. (3), VI. 1878, p. 31.
Moreton Bay, Queensland.

ACYRUSA. Pascoe.

5785 CILIATA Pascoe, Trans. Ent. Soc. Lond. 1863, p. 559.
Illawarra, N. S. Wales.

SKELETODES. Newman.

5786 TETROPS Newm. Zool. App. 1850, p. 113.
inscriptus Pascoe, (Elete), Trans. Ent. Soc. (3), I. 1863, p. 554, t. 22, f. 2.
N. S. Wales, and Queensland.

SIDIS. Pascoe.

5787 OPILOIDES Pascoe, Journ. Linn. Soc. IX. p. 94, t. 4, f. 3.
S. Australia.

PAPHORA. Pascoe.

5788 MODESTA Pascoe, Journ. of Ent. II., 1863, p. 237; Journ. Linn. Soc. IX. t. 4, f. 6.
S. Australia.

PORITHEA. Pascoe.

5789 INTORTA Newm. Entomol. 1842, pp. 223, 322; Pascoe Journ. Linn. Soc. Zool. IX. 1866, p. 102.
Australia.

BETHELIUM. Pascoe.

5790 INSCRIPTUM Pascoe, Journ. of Ent. I. 1862, p. 363; Journ. Linn. Soc. Zool. IX. 1866, p. 97.
Wide Bay, &c., Queensland.

5791 SIGNIFERUM Newm. Entomol. 1840, p. 10; Lacord. Gen. Atl. IX. t. 87, f. 3.
personatum Erichs. Wiegm. Arch. 1847, I. p. 221.
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N. S. Wales, and Queensland.

PYTHEUS. Newman.

5936 JUGOSUS Newm. Entomol. 1840, p. 14.
N. S. Wales.

5937 LATEBROSUS Newm. Entomol. 1840, p. 95.
var. *pallidus* White, Voy. Ereb. Terr. p. 19, t. 4, f. 4.
N. S. Wales, Victoria, S. Australia, W. Australia, and Tasmania.

5938 PULCHERRIMUS Pascoe, Trans. Ent. Soc. (2), V. 1859, p. 28; Lacord. Gen. Atl. X. t. 91, f. 4.
Queensland.

BRACHYTRIA. Newman.

5939 CENTRALIS Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 564.
N. S. Wales, and Queensland.

5940 GULOSA Newm. Ann. Nat. Hist. V. 1840, p. 16; Saund. Trans. Ent. Soc. (2), I. p. 83, t. 4, f. 3.
Callidiomorphus depressa Homb. et Jacq. Voy. Pôle Sud, IV. t. 17, f. 3.
Australia. (Widely distributed).

5941 PICTA C. O. Waterhouse, Ann. Nat. Hist. (4), XIX. 1877, p. 424.
Queensland.

5942 VARIA C. O. Waterhouse, Ann. Nat. Hist. (4), XIX. 1877, p. 423.
Sydney, N. S. Wales.

PEMPSAMACRA. Newman.

5943 DISPERSA Newm. Entomol. 1842, p. 354.
N. S. Wales, Victoria, and S. Australia.

5944 PYGMÆA Newm. Zool. App. 1851, p. 128.
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Victoria, and N. S. Wales.

5945 SUBAUREA Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 564.
N. S. Wales.

5946 TILLIDES Newm. Ent. Mag. V. 1838, p. 496, c. fig.; Lacord. Gen. Col. 1869, p. 531, nota 1.
N. S. Wales.

5947 VESTITA Pascoe, Trans. Ent. Soc. (2), V. 1859, p. 57.
Victoria.

TITURIUS. Pascoe.

5948 CALCARATUS Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 63.
Rope's Creek, N. S. Wales.

OMOPHÆNA. Pascoe.

5949 KREUSLERI Pascoe, Journ. of Ent. II. 1863, p. 231, t. 11, f. 8.
S. Australia.

5950 TÆNIATA Pascoe, Journ. Linn. Soc. Zool. IX. 1866, p. 93.
Australia.

OBRIDA. White.

5951 COMATA Pascoe, Journ. of Ent. II. 1863, p. 50.
Queensland.

5952 FASCIALIS White, Stoke's Discov. I. App. 1846, p. 510, t. 2, f. 4; Longic. VIII. (2), p. 288.
N. S. Wales, and Victoria.

SCHIZOPLEURUS. Lacordaire.

5953 BALTEATUS Lacord. Gen. Col. VIII. 1869, p. 535, nota 1.
Australia.

TELOCERA. White.

5954 WOLLASTONI White, Ann. Nat. Hist. (3), II. 1858, p. 355, c. fig.; Lacord. Gen. Atl. X. t. 91, f. 5.
N. S. Wales.

EBURIGERA. White.

5955 OCTOGUTTATA White, Longic. VIII. (2), 1855, p. 332, t. 8, f. 7.
Victoria.

TAPHOS. Pascoe.

5956 ATERRIMUS Pascoe, Journ. of Ent. II. 1863, p. 236, t. 11, f. 7; Lacord. Gen. Atl. X. t. 91, f. 6.
S. Australia.

TYPHOCESIS. Pascoe.

5957 MACLEAYI Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 562, t. 23, f. 4; Lacord. Gen. Atl. X. t. 92, f. 1.
Port Denison, &c., Queensland.

BIXORESTES. Pascoe.

5958 DECTUS White, Longic. VIII. (2), 1855, p. 267; Pascoe, Ann. Nat. Hist. (3), XIX. 1867, p. 315.
Australia.

5959 INTERRUPTUS Oliv. Encycl. méth. V. 1790, p. 307; Ent. IV. 67, p. 35, t. 17, f. 133; Fabr. Ent. Syst. I. 2, p. 225; Lacord. Gen. Col. 1869, p. 542, nota 1.
Australia.

HEMISTHOCERA. Newman.

5960 FLAVILINEA Newm. Zoolog. App. 1850, p. III.; White, Longic. VIII. (2), t. 6, f. 2.
N. S. Wales, and Queensland.

CHLORIDOLUM. Thomson.

5961 CINDERELLUM White, Longic. VII. (1), p. 156.
Australia.

HYLOTRUPES. Serville.

5962 ASEMOIDES Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 563.
S. Australia.

CALLIDIUM. Fabricius.

5963 EROSUM W. S. Macleay, King's Surv. Austr. App. II. 1855, p. 450.
Australia.

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Australia.

5965 MOROSUM Boisd. Voy. Astrol. II. 1835, p. 480.
Australia.

5966 VEXATUM Newm. Zool. 1847, p. 1676.
Australia.

5967 VITTIGERUM Newm. Zool. 1847, p. 1677.
Australia.

CLYTUS. Laicharting.

5968 AUSTRALIS Lap. et Gory, Mon. p. 99, t. 19, f. 118; Pascoe, Trans. Ent. Soc. (3), III. p. 607.
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N. S. Wales, and Queensland.

5969 CURTISI Lap. et Gory, Mon. p. 49, t. 10, f. 56, bis.
N. S. Wales, and Queensland.

5970 DURVILLEI Lap. et Gory, Mon. p. 95, t. 17, f. 111.
Australia.

5971 SEXMACULATUS Donov. Ins. N. Holl. 1805, t. 5, f. 5; Boisd. Voy. Astrol. II. p. 482, (gen. dub.).
Australia.

CREMYS. Pascoe.

5972 DIOPHTHALMUS Pascoe, Journ. of Ent. I. 1862, p. 358; II. 1864, p. 246; Ann. Nat. Hist. 1867, p. 316; Lacord. Gen. Atl. X. t. 92, f. 3.
Queensland.

OCHYRA. Pascoe.

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Mount Wellington, Tasmania.

HOMÆMOTA. Pascoe.

5974 BASALIS Pascoe, Journ. of Ent. II. 1865, p. 372.
Perth, W. Australia.

5975 DUBOULAYI Pascoe, Journ. Linn. Soc. IX. p. 103.
W. Australia.

TILLOMORPHA. Blanchard.

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Queensland.

ECTOSTICTA. Pascoe.

5977 CLEROIDES White, Longic. VIII. (2), 1855, p. 322.
var. *simillima* White, Longic. (2), 1855, p. 322; Lacord. Gen. Col. IX. 1869, p. 92, nota 1.
Australia. (Widely distributed).

5978 EBURATA Pascoe, Trans. Ent. Soc. (3), I. 1863, p. 563. Lacord. Gen. Col. IX. 1869, p. 92, nota 1.
N. S. Wales.

5979 RUIDA Pascoe, Journ. Linn. Soc. IX. 1866, p. 104.
Champion Bay, W. Australia.

IPOMORIA. Pascoe.

5980 TILLIDES Pascoe, Journ. Linn. Soc. IX. 1866, p. 104, t. 4, f. 1.
S. Australia.

SOPHRON. Newman.

5981 EBURATUS Pascoe, Journ. of Ent. II. 1865, p. 374.
S. Australia.

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Cleadne melanaria Pascoe, Trans. Ent. Soc. (3), I, 1863, p. 561, t. 23, f. 5.
N. S. Wales, Victoria, and S. Australia.

AMPHIRHOE. Newman.

5983 DECORA Newm. Entomol. 1841, p. 24, c. fig.; Lacord. Gen. Atl. X. t. 93, f. 1.
Australia, and Tasmania.

LEPTOCERA. Serville.

5984 SUTURALIS Pascoe, (Glaucytes), Journ. Linn. Soc. X. 1867, p. 308.
N. S. Wales, and Queensland.

5985 VITTIFERA Buquet. Guér. Jc. Règn. Anim. p. 250.
Australia.

ARIDÆUS. Thompson.

5986 HEROS Pascoe, Journ. Linn. Soc. IX. 1867, p. 103.
Cape York, N. Australia.

5987 THORACICUS Don. Epit. Ins. N. Holl. 1805, t. 5, f. 4; Lap. et Gory, Mon. p. 50, t. 10, f. 58; Thoms. Class. Longic. 1860, p. 228; Lacord. Gen. Atl. X. t. 93, f. 2.
N. S. Wales, and Queensland.

ACROCYRTA. Pascoe.

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N. S. Wales, and Queensland.

ISCHNOTES. Newman.

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Victoria.

5990 CYLINDRACEA Newm. Ann. Nat. Hist. V. 1840, p. 18; White, Longic. VIII. (2), p. 212, t. 7, f. 1.
S. Australia.

PURPURICENUS. Serville.

5991 ANGASI White, (Cyclodera), Angas's South Austral. Ill. 1847, t. 50, f. 17; Longic. VII. (1), 1853, p. 140.
Queensland, S. Australia ?

5992 QUADRINOTATUS White, Stokes's Discov. App. I. 1846, p. 510, t. 2, f. 6.
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Queensland, S. and W. Australia.

TRAGOCERUS. Serville.

5993 BIDENTATUS Donov. Epitom. Ins. N. Holl. 1805, t. 6, f. 4; Gray, Griff. Anim. Kingd. t. 95, f. 8; Boisd. Voy. Astrol. II. 1835, p. 466.
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N. S. Wales.

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Australis Boisd. Voy. Astrol. II. p. 465, t. 8, f. 6; Dej. Cat. 3 ed. p. 344; Casteln. Hist. Nat. II. p. 404.
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N. S. Wales.

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Lizard Island, N. E. Coast.

5996 LEPIDOPTERUS Schreib. Trans. Linn. Soc. VI. 1802, p. 197, t. 21, f. 7; Donov. Epitom. Ins. N. Holl. t. 5, f. 3; Boisd. Voy. Astrol. II. p. 466.
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5997 SPENCEI Hope, Trans. Ent. Soc. I. 1834, p. 18, t. 2, f. 4.
N. S. Wales, Victoria, S. Australia, and Tasmania.

5998 SUBFASCIATUS Germ. Linn. Ent. III. 1848, p. 244.
W. Australia, S. Australia ?

ANASTETHA. Pascoe.

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Queensland.

NAOMORPHA. Thomson.

6000 TEXTORIA Newm. Ann. Nat. Hist. V. 1840, p. 18; Lacord. Gen. Col. IX. 1869, p. 223, nota 2.
Australia.

Sub-Family. LAMIIDES.

SPHINGNOTUS. Perroud.

6001 INSIGNIS Perroud, Ann. Soc. Linn. Lyon, II. 1855, p. 413.
Australia.

TEMNOSTERNUS. White.

6002 APICALIS Pascoe, Ann. Nat. Hist. (5), II. 1878, p. 371.
Rockhampton, Queensland.

6003 DISSIMILIS Pascoe, Trans. Ent. Soc. (2), V. 1859, p. 59.
Moreton Bay, Queensland.

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N. S. Wales, and Queensland.

6005 VITULUS Pascoe, Ann. Nat. Hist. (4), VIII. 1871, p. 275.
Wide Bay, &c., Queensland.

DORCADIDA. White.

6006 BIOCULARIS White, Voy. Ereb. Terr. Part XI. 1846, p. 22, t. 4, f. 11.
Tasmania.

STYCHUS. Lacordaire.

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Southern parts of Queensland.

MICROTRAGUS. Pascoe.

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W. Australia.

6009 EREMITA Pascoe, Journ of Ent. II. p. 362,
S. Australia.

6010 LUCTUOSUS Shuck. Ent. Mag. V. 1838, p. 510.
Tasmania ?

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Australia.

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Australia.

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Kangaroo Island, S. Australia.

CERÆGIDION. Boisduval.

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ATHEMISTUS. Pascoe.

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Victoria.

6017 ARMITAGEI Pascoe, Journ. Linn. Soc. IX. 1866, p. 87.
N. S. Wales.

6018 BITUBERCULATUS Pascoe, Journ. Linn. Soc. IX. 1867, p. 306.
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N. S. Wales.

CORESTETHA. Pascoe.

6024 INSULARIS Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 64.
Eclipse Island, N. E. Coast.

MESOLITA. Pascoe.

6025 LINEOLATA Pascoe, Journ. of Ent. I. p. 363.
Southern parts of Queensland.

6026 TRANSVERSA Pascoe, Journ. of Ent. I. p. 363, t. 17, f. 7; Lacord. Gen. Col. IX. 1869, p. 277, nota 2.
N. S. Wales.

MONOHAMMUS. Serville.

6027 ACANTHIAS Pascoe, Ann. Nat. Hist. (4), XV. 1875, p. 65.
Manning River, N. S. Wales.

6028 ARGENTATUS Hope, MSS.
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Australia.

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N. S. Wales, Queensland, and Victoria?

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Queensland.

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S. Australia, and Queensland.

6034 TOGATUS Perroud, Ann. Soc. Linn. Lyon, II. 1855, p. 341.
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PELARGODERUS. Serville.

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Cape York, &c., N. Australia.

CALLIPYRGA. Newman.

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BATOCERA. Castelnau.

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Palmer River, N. Queensland.

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Cape York, N. Queensland.

6042 SAPHO Thoms. Rev. Mag. Zool. (3), VI. 1878, p. 51.
Cape York, N. Australia.

ROSENBERGIA.

6043 MEGACEPHALA v. d. Poll, Notes Leyden Museum, VIII. 1886, p. 32, t. 1, f. 5, and 5a.
Port Darwin, N. Australia.

GNOMA. Fabricius.

6044 SUTURALIS Westw. Griff. Anim. Kingd. II. 1832, p. 120, t. 70, f. 2; Boisd. Voy. Astrol. II. 1835, p. 510.
Australia.

COPTOPS. Serville.

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Australia.

METON. Pascoe.

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Port Bowen, Queensland.

ANCITA. Thomson.

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Australia.

OLENECAMPTUS. Chevrolat.

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Australia.

ARSYSIA. Pascoe.

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Cape York, N. Australia.

DYSTHÆTA. Pascoe.

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ORICOPIS. Pascoe.

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N. S. Wales, and Queensland.

DEMONASSA. Thomson.

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funeraria Thoms. Syst. Ceramb. 1864, p. 328.
Illawarra, N. S. Wales.

ZYGOCERA. Erichson.

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infuscata Thoms. Syst. Ceramb. p. 88 (ex error.).
N. S. Wales, and Queensland.

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S. and W. Australia.

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Swan River, W. Australia.

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N. S. Wales, and Queensland.

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N. S. Wales, and Queensland.

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Hunter River, &c., N. S. Wales.

CYOCYPHAX. Thomson.

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Australia.

THYADA. Pascoe.

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PROBATODES. Thomson.

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VELORA. Thomson.

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HEBECERUS. Thomson.

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annulicornis Latr. Dej. Cat. 3 ed. p. 362.
funereus W. S. Macleay, Dej. Cat. 3 ed. p. 362.
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N. S. Wales, and Queensland.

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Gayndah, Queensland.

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S. Australia.

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Southern Queensland.

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S. and W. Australia.

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PRAONETHA. Pascoe.

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Australia.

LYCHROSIS. Pascoe.

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Southern Queensland.

HATHLIODES. Pascoe.

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Champion Bay, W. Australia.

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N. Australia.

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OBEREA. Mulsant.

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S. Australia.

DESCRIPTIONS OF NEW LEPIDOPTERA.

By E. Meyrick, B.A., F.E.S.

NOCTUINA.

Thalpochares, Hb.

Thalp. coccophaga, n. sp.

♂ ♀. 18-21 mm. Head, palpi, antennæ, and collar pale brownish-ochreous; thorax grey suffusedly irrorated with white. Abdomen pale grey. Legs grey, irrorated with white. Forewings elongate-triangular, costa very slightly concave, apex round-pointed, hindmargin strongly rounded, oblique; dull fuscous-reddish; base irrorated with white; first, second, and subterminal lines very slender, grey-whitish, distinct, subterminal running to apex; space between second and subterminal lines suffused with whitish towards costa, forming a triangular patch, and sometimes less strongly throughout; hindmarginal area irrorated with white towards anal angle: cilia fuscous-reddish, becoming grey towards anal angle, tips white. Hindwings fuscous-grey, becoming ochreous-whitish towards base; cilia grey, tips whitish.

Larva 16-legged, stout, whitish, head black; feeds on a species of *Coccus* infesting a *Macrozamia*, living concealed in a cocoon-like shelter formed of the exuviæ of the *Coccus*, and finally pupating therein. This mode of life is very singular, and not shared by most other species of the genus, but the allied *Thalp. communimacula* from Europe has similar habits. The present larva was discovered by Mr. Geo. Masters, who found it in plenty, and satisfactorily established that it feeds solely on the *Coccus*, and never touches the plant. The species of *Coccus* is at present undetermined, and it may perhaps occur also on other plants. When the larva is numerous, it completely clears the plant from *Coccus* for the time.

Sydney, in November, December, and March; bred freely by Mr. Masters, and also taken commonly by myself at light.

CRAMBIDÆ

HEDNOTA, Meyr.

Hedn. xylophaea, n. sp.

♂ ♀. 22-23 mm. Head, palpi, and thorax brownish-ochreous; labial palpi 5, very slender; frontal cone strong. Antennæ grey, in ♂ subdentate, shortly ciliated ($\frac{1}{3}$). Abdomen and legs whitish-grey, sometimes ochreous-tinged. Forewings elongate, narrow, costa gently arched, apex round-pointed, hindmargin straight, very oblique; brownish-ochreous; a thick cloudy blackish streak above middle from base to hindmargin, much attenuated and tending to be obsolete towards extremities, sometimes with a cloudy prominence on lower edge beyond middle; a cloudy narrow blackish streak along submedian fold from base to anal angle; between these in one specimen is a straight white median streak throughout, at posterior extremity with two wedge-shaped diminishing white marks above it, and an ill-defined white subcostal streak from above middle of disc to costa before apex: cilia grey-whitish, with an indistinct fuscous line near base. Hindwings with veins 4 and 5 more or less stalked, or coincident; grey-whitish, somewhat greyer towards apex; cilia white.

Mount Lofty, South Australia; three specimens taken by Mr. E. Guest.

TORTRICIDÆ

ISOCHORISTA, Meyr.

Isoch. cosmota, n. sp.

♂. 17 mm. Head and thorax dark fuscous, face, antennæ, and patagia whitish-ochreous. Palpi whitish-ochreous, second joint externally mixed with dark fuscous. Abdomen dark grey, anal tuft whitish-ochreous. Legs dark grey, ringed with whitish-ochreous, posterior pair whitish-ochreous. Forewings elongate, moderately dilated, costa gently arched, apex round-pointed, hindmargin sinuate, oblique; pale yellow-ochreous; costal fold suffusedly strigulated with dark fuscous; a nearly straight black line from $\frac{2}{3}$ of costa to $\frac{3}{5}$ of inner margin, beyond which the groundcolour is wholly reddish-fuscous, bisected by a straight line from $\frac{2}{3}$ of costa to anal angle, anterior half mixed with blackish-grey, posterior half with whitish-ochreous; a small blackish spot on costa at $\frac{3}{4}$, and some blackish scales on hindmargin: cilia whitish-ochreous mixed with reddish, on anal angle and upper half of hindmargin suffused with blackish-grey. Hindwings grey, becoming ochreous-whitish towards base; a moderately broad dark grey hindmarginal band, becoming blackish on anal angle; cilia grey, with a darker line: a membranous ridge in disc beneath; veins 3 and 4 tolerably parallel, 5 more widely remote.

Mount Lofty, South Australia; one specimen taken by Mr. E. Guest.

GELECHIADAE

MAGOSTOLIS, n. g.

Head smooth; ocelli absent; tongue well-developed. Antennæ longer than forewings, in ♂ simple, basal joint with moderate pecten. Labial palpi very long, smooth, slender, recurved, terminal joint as long as second, acute, Maxillary palpi short, appressed to tongue. Posterior tibiæ shortly rough-scaled beneath, median spurs above middle, long. Forewings with vein 1 furcate, 2 and 3 stalked from angle, 7 and 8 stalked, 7 to hindmargin, 9 and 10 stalked, 11 from near end of cell. Hindwings as broad as forewings, trapezoidal, apex round-pointed, hindmargin somewhat sinuate, cilia $\frac{2}{3}$; veins 3 and 4 from a point, 6 and 7 approximated towards base.

Near *Crocanthes.*

Mag. uranaula, n. sp.

♂. 15 mm. Head, palpi, and antennæ yellow, face whitish. Thorax grey, collar red, patagia ochreous-whitish, apex red. Abdomen white. Anterior and middle legs yellowish, apex of tibiæ spotted with grey; posterior legs white. Forewings elongate, narrow, posteriorly gradually dilated, costa slightly arched, apex tolerably acute, hindmargin concave below apex, rather oblique, rounded beneath; rather dark grey; a red streak along basal third of costa, bordered beneath by an ochreous-white streak, of which the posterior extremity forms an oblong spot surrounded by a dark grey line; a broad yellow streak, margined beneath with red except on fascia, along middle third of costa, apex suddenly pointed; a rather narrow silvery-white direct fascia somewhat before middle, terminated above by yellow streak, margined anteriorly with red, posteriorly with dark grey and then more broadly with red; a rather narrow silvery-white fascia, margined with red all round, from beneath costa at $\frac{2}{3}$ along costa to apex, thence along hindmargin to anal angle: cilia yellow, beneath anal angle greyish. Hindwings and cilia white.

Queensland; one specimen taken by Dr. T. P. Lucas.

CRYPTOLECHIADAE

CRYPTOPHASA, Lw.

Crypt. leucadelpha, n. sp.

♂ ♀. 41-46 mm. Differs from *C. irrorata* only as follows: Abdomen grey-whitish. Hindwings white, with moderately broad suffused fuscous hindmarginal fascia not reaching anal angle.

Larva feeding on a species of *Casuarina*.

Wimmera, Victoria; five specimens (Colls. Lucas and Kershaw.)

Crypt. ecclesiastis, n. sp.

♀. 66 mm. Head and thorax white. Antennæ fuscous. Abdomen white, above with a broad black transverse band before middle, and five slender black rings between this and apex, apical scales yellowish-tinged. Legs white, anterior and middle tibiæ banded with black, all tarsi black with white rings. Forewings elongate-oblong, costa bent before middle, apex rounded, hindmargin rather oblique, hardly rounded; shining white; a narrow coppery hindmarginal fascia, forming alternate purple and golden spots: cilia white, barred with dark fuscous. Hindwings shining white; a narrow coppery-purplish hindmarginal fascia; cilia white.

Dandenong Range, Victoria; one specimen taken by Dr. T. P. Lucas.

DEPRESSARIADAE

Gonionota, Z.

Gon. pyrobola, n. sp.

♂. 24-27 mm. Head red, spotted with yellow. Palpi greyish-red, apex of second and terminal joints with a yellowish-white spot. Antennæ ochreous-whitish, becoming reddish towards base, beneath grey. Thorax red, with three small dorsal yellow spots, and four anterior and three posterior silvery-white spots. Abdomen ochreous-whitish. Legs white, anterior pair dark red ringed with white, middle pair reddish-tinged. Forewings oblong, slightly dilated, costa moderately arched towards base, apex evenly rounded, hindmargin hardly obliquely rounded; red, sometimes posteriorly sprinkled with yellow-whitish between veins; all veins and folds marked with series of evenly arranged round yellow dots; a narrow fuscous suffusion along costa from base to $\frac{2}{3}$; a suffused fuscous band from middle of submedian fold to costa at $\frac{2}{3}$, sending streaks posteriorly along veins; about seven irregularly arranged small round silvery-white spots towards base of wing and anterior half of costa; a small transverse-oval silvery-white spot in disc at $\frac{2}{3}$, a smaller round spot above it, and three silvery-white dots on veins beyond them; a dark fuscous hindmarginal line: cilia pale reddish, base fuscous. Hindwings and cilia very pale whitish-yellowish.

Newcastle, New South Wales; two specimens (Australian Museum).

GLYPHIPTERYGIDAE

Hypertropha, Meyr.

Hyper. chlaenota, n. sp.

♂ ♀. 22-23 mm. Head, palpi, antennæ, and thorax whitish-ochreous; thorax not crested, posteriorly suffusedly spotted with fuscous. Abdomen purplish-fuscous, beneath yellowish. Legs dark fuscous, ringed with whitish; posterior tibiæ pale yellowish. Forewings moderate, posteriorly considerably dilated, costa gently arched, apex rounded, hindmargin straight, rather oblique, rounded beneath; rather dark shining fuscous, with coppery reflections; a large whitish-ochreous basal patch, extending on costa to middle, on inner margin to $\frac{2}{5}$, its outer edge nearly straight, on costa marked with four direct cloudy blackish strigulae; a small whitish-ochreous irregularly triangular spot on inner margin before anal angle, containing a dot of groundcolour; space between this and basal patch thickly strewn with small bluish-leaden metallic spots, a curved broken dentate whitish-ochreous line from $\frac{4}{5}$ of costa to anal angle, preceded by an irregular series of bluish-leaden metallic spots, before which is a blackish suffusion in disc: cilia shining coppery-fuscous. Hindwings ochreous-yellow, with a moderate dark fuscous hindmarginal border; cilia light yellow, with a dark grey basal line, above apex and on hindmargin from below middle to anal angle wholly dark grey.

Melbourne, Victoria; Mount Lofty, South Australia; several specimens (Colls. Guest and Lucas).

PLUTELLIDAE

Acmosara, n.g.

Head rough on crown, hairs projecting in a strong tuft between antennæ, face smooth; ocelli present; tongue well-developed. Antennæ $\frac{3}{4}$, in ♂ filiform, serrated with scales on back, evenly ciliated ($1\frac{1}{2}$), basal joint moderate, without pecten. Labial palpi

moderately long, slightly arched, obliquely ascending, second joint slender, smoothly scaled, terminal joint much shorter than second, dilated with loose scales so as to become elongate-ovate, obtuse. Maxillary palpi obsolete. Posterior tibiæ with projecting hairs above. Forewings with vein 1 furcate, 2 from near angle of cell, 7 to costa, 11 from middle of cell. Hindwings as broad as forewings, elongate-ovate, cilia $\frac{2}{3}$; veins 3 and 4 parallel, 5 approximated to 4 at base, 6 and 7 parallel, 6 running to costa.

Acm. polyxena, n. sp.

♂. 18 mm. Head and palpi light grey, finely irrorated with dark grey and whitish, palpi whitish internally. Antennæ grey. Thorax grey-whitish mixed with reddish-fuscous. Legs grey, posterior pair grey-whitish. (Abdomen broken). Forewings elongate, costa moderately arched, apex round-pointed, hindmargin very oblique, slightly rounded; grey, somewhat mixed with reddish-ochreous, and suffused with white towards disc; a cloudy irregular central longitudinal fuscous-reddish streak from base to near middle, margined above with some scattered black scales; a fine black line from disc at $\frac{3}{5}$ to costa near apex, below which the hindmarginal area is suffused with light ochreous-reddish: cilia grey-whitish, with a reddish-grey line near base. Hindwings and cilia grey-whitish.

Mount Lofty, South Australia; one specimen taken by Mr. E. Guest.

HYPONOMEUTIDAE

Enaemia, Z.

Enaem. erythractis, n. sp.

♂. 28-29 mm. Head pale yellow, crown reddish-tinged. Palpi and antennæ orange-red; antennæ with a short spine on each joint. Thorax pale yellow, anterior margin, and an irregular transverse stripe connected in middle with a small posterior spot red. Abdomen orange. Legs red, anterior and middle tibiæ with suffused pale yellow band, base of tarsi yellowish. Forewings elongate, costa strongly arched; apex rounded, hindmargin obliquely rounded; pale yellow; all veins and folds marked with somewhat irregular red lines; a red transverse basal streak; a small red spot on costa near base, and another in middle; a red bar from cell to inner margin at $\frac{1}{4}$, and another from end of cell; a small irregular red spot near inner margin before middle; a red line along hindmargin and apical fifth of costa: cilia pale yellow, base red. Hindwings and cilia bright orange.

Bowen, Queensland; two specimens (Coll. Macleay).

Enaem. caminaea, n. sp.

♂. 25-26 mm., ♀. 30-31 mm. Head and palpi bright orange. Antennæ white, base orange. Thorax in ♂ brown-red, in ♀ flesh-colour. Abdomen orange-yellow. Legs orange, middle tibiæ and tarsi and posterior tarsi whitish. Forewings elongate-oblong, costa moderately arched, apex rounded, hindmargin obliquely rounded; in ♂ brown-red, in ♀ flesh-colour; a deep yellow streak along inner margin from near base to $\frac{3}{4}$, attenuated posteriorly; costal edge narrowly orange except towards base; markings yellowish-white; a small semi-oval spot on costa beyond $\frac{1}{3}$, and a smaller subquadrate spot beyond $\frac{2}{3}$; a similar quadrate spot above dorsal streak at $\frac{1}{3}$, and two dots further on, last on end of streak; sometimes two or three very minute dots in disc posteriorly; a very small apical spot, and a dot on middle of hindmargin, in ♂ sometimes both nearly obsolete: cilia orange. Hindwings orange-yellow, apical third suffusedly brown-red, in ♀ more orange; cilia orange.

Newcastle, New South Wales; four specimens (Australian Museum).

CERATOPHYSETIS, n. g.

Head with appressed scales; ocelli present; tongue well-developed. Antennæ $\frac{4}{5}$, in ♂ with basal $\frac{3}{5}$ extremely swollen, somewhat compressed laterally, clothed with scales, central portion very shortly lamellated, apex filiform. Labial palpi short, arched, smoothly scaled, terminal joint shorter than second, acute. Maxillary palpi short (?). Posterior tibiæ with appressed scales. Forewings with vein 1 furcate, 7 and 8 stalked, 7 to costa. Hindwings as broad as forewings, oblong-ovate; veins 3 and 4 approximated at base, 5, 6, and 7 somewhat approximated.

Cerat. sphaerosticha, n. sp.

♂. 28 mm. Head black, sidetufts and face ashy-whitish. Antennæ ashy-whitish, basal joint with two black spots. Palpi black, second joint broadly, terminal joint narrowly whitish at apex. Thorax ashy-whitish, collar, four spots placed transversely behind it, and a large posterior central spot black. Abdomen golden-yellow, with two dorsal rows of black spots. Legs blackish, tarsi with whitish apical rings. Forewings elongate-oblong, costa arched towards base, apex obtuse, hindmargin obliquely rounded; pale ashy-grey, with fourteen black spots; one linear on base of costa, two very small at base of inner margin, one linear beneath costa near base, remaining ten subcircular, scattered over disc; a hindmarginal row of black spots: cilia pale ashy-grey, apex smoky-grey. Hindwings pale fuscous-grey, rather darker towards apex; cilia pale grey.

Brisbane, Queensland; one specimen (Coll. Miskin).

THYRIDECTIS, n. g.

Head with loosely appressed hairs; ocelli present; tongue well-developed. Antennæ $\frac{4}{5}$, in both sexes alike serrate, minutely ciliated ($\frac{1}{4}$), basal joint moderate, without pecten. Labial palpi moderate, arched, ascending, with appressed scales, second joint slightly rough beneath, terminal joint shorter than second, cylindrical, not pointed. Maxillary palpi moderate, filiform, porrected. Posterior tibiæ smoothly scaled. Forewings with vein 1 furcate, 2 from near end of cell, 7 to costa, 8 and 9 stalked, 11 from middle of cell. Hindwings somewhat broader than forewings, elongate-ovate, cilia $\frac{1}{5}$; a small transparent spot beyond cell between veins 7 and 8; 3 and 4 from near together, 6 and 7 parallel.

Thyr. psephonoma, n. sp.

♂ ♀. 26-27 mm. Head light ochreous-yellow. Palpi dark fuscous. Antennæ greyish. Thorax white, anterior margin, a spot on shoulders, and a posterior spot dark fuscous. Abdomen dark fuscous, segmental margins white, anal tuft ochreous-yellow. Legs dark fuscous, ringed with whitish. Forewings elongate, costa rather strongly arched, apex obtuse, hindmargin oblique, slightly rounded; white; a broad fuscous streak along costa from base to $\frac{4}{5}$, indented at $\frac{1}{3}$, apex pointed; an elongate fuscous spot extending along inner margin from $\frac{1}{3}$ to $\frac{3}{4}$; twelve small blackish-fuscous spots or dots, first on base of costa, two in disc near base, two rather larger on margin of costal streak before and beyond middle, two beneath them near dorsal spot, one above posterior of these, and four in a sinuate series from disc at $\frac{3}{4}$ towards anal angle; a blackish-fuscous hindmarginal fascia, broadest above middle, suddenly attenuated beneath, divided into six spots by white veins: cilia dark fuscous, base white. Hindwings grey, towards inner margin white; cilia grey, becoming white towards anal angle.

Newcastle, New South Wales; two specimens (Australian Museum).

ELACHISTIDAE

PTILOCHARES, n. g.

Head smooth, sidetufts small, erect; ocelli present; tongue developed. Antennæ $\frac{4}{5}$, in ♂ serrate, unevenly pubescent, basal joint long, with moderate pecten. Labial palpi moderately long, recurved, second joint with rough scales tending to form a short median tuft beneath, terminal joint as long as second, rather stout, acute. Maxillary palpi very short, filiform. Abdomen (in ♂ only ?) posteriorly dilated laterally with rough projecting scales, anal tuft moderate. Posterior tibiæ clothed with long loose hairs above. Forewings narrow, lanceolate; vein 1 furcate (?), 2 from $\frac{3}{4}$ of cell, 7 and 8 stalked, 7 to costa, 11 from middle of cell. Hindwings $\frac{2}{3}$, narrow-lanceolate, cilia 2; veins 5, 6, 7 somewhat approximated at base, 7 to costa.

Ptil. trissodesma, n. sp.

♂. 20 mm. Head grey, sides ochreous-yellow. Palpi pale ochreous-yellow. Antennæ dark fuscous, with median and apical white bands. Thorax purple-black. Abdomen pale ochreous, posteriorly and on lateral tufts blackish, anal tuft whitish-ochreous. Legs black, banded with white, posterior tibiæ grey-whitish. Forewings purple-black, with three straight white fasciæ; first moderately broad, rather near base, yellowish-tinged; second in middle, narrow, not reaching inner margin; third at ¾, rather inwardly oblique, narrow, almost linear in middle: cilia grey, with a white apical spot. Hindwings and cilia grey.

Victoria; one specimen taken by Dr. T. P. Lucas.

CASTORURA, n. g.

Head smooth; ocelli present; tongue well-developed. Antennæ almost as long as forewings, basal half thickened with scales, becoming long and roughly projecting on back towards middle, basal joint elongate, rather dilated terminally, without pecten. Labial palpi moderate, curved, ascending, slender, loosely rough-scaled beneath throughout, terminal joint almost as long as second, acute. Maxillary palpi obsolete. Abdomen (in ♀) very broad, flattened, apical segment with lateral tufts of scales. Posterior tibiæ smooth-scaled, spurs long, tarsi somewhat rough beneath. Forewings elongate-lanceolate; vein 1 simple, 2 from ¾ of cell, 6 and 7 stalked, 7 to costa, 8 absent, 9 from near 7, 11 from ¾ Hindwings ⅔, elongate-lanceolate, cilia 2; costa towards base with a fringe of rough scales drawn over wing; veins 2, 3, 4, 5 equidistant and parallel, 6 and 7 approximated at base.

Cast. chrysias, n. sp.

♀. 15 mm. Head, palpi, antennæ, thorax, and legs dark purplish-fuscous; palpi yellow-whitish towards base; thorax with posterior extremity orange. Abdomen orange-yellow, anal segment purple-blackish except apex. Forewings purple-black, with four roundish yellow spots; first on inner margin towards base; second largest, in disc before middle; third on inner margin before anal angle; fourth on costa beyond third: cilia purple-black. Hindwings yellow, apical fourth dark purple-fuscous; cilia dark grey, towards anal angle yellowish.

Maryborough, Queensland; one specimen (Coll. Macleay).

LYONETIADAE

Atalopsycha, Meyr.

From an examination of the present species I am enabled to give the neuration of the genus, formerly omitted: Forewings with vein 1 simple, 2, 4, and 6 absent, 7 and 8 stalked, 7 to hindmargin, 9 from a point with stalk of 7 and 8, 10 absent. Hindwings without cell, 1a and 1c absent, 2 and 4 absent, 5 and 6 out of 7, 6 to hindmargin, 8 short, free.

Atal. melanthes, n. sp.

♂. 14 mm. Head white, face and palpi dark fuscous. Antennæ grey, basal joint white. Thorax dark fuscous, becoming white anteriorly. Abdomen and legs grey. Forewings lanceolate, white; an irregular grey blotch towards base of inner margin, with some blackish scales above; middle third of costa narrowly dark fuscous; a small black spot in disc before middle, and a second beneath costa at $\frac{2}{3}$; a fuscous spot, becoming black above, on middle of inner margin; a cloudy black streak from costa near apex to anal angle, where it forms a spot: cilia grey, on apex whitish, below it dark grey, with two black lines round apex. Hindwings and cilia grey.

Mount Lofty, South Australia; one specimen taken by Mr. E. Guest.

FLOWERING SEASONS OF AUSTRALIAN PLANTS.

BY E. HAVILAND, F.L.S.

No. I.—LIST OF PLANTS INDIGENOUS IN THE NEIGHBOURHOOD OF SYDNEY, FLOWERING DURING JULY.

As it is impossible for the author to visit more than a few localities during each month, these lists must necessarily, for the present, be very imperfect. Supplementary lists will, however, be added as each month recurs, until, it is hoped, the flowering seasons of at least all the Cumberland plants have been obtained.

- Dilleniaceæ—
  - *Hibbertia stricta*
  - ,, *acicularis*
  - ,, *linearis*
  - ,, *Billardieri.*
- Pittosporeæ—
  - *Billardiera scandens.*
- Violaceæ—
  - *Viola hederacea*
  - *Hybanthus Vernonii*
- Rutaceæ—
  - *Eriostemon lanceolatus*
  - ,, *Crowei*
  - ,, *buxifolius*
  - *Phebalium squamulosum*
  - *Philotheca australis*
  - *Zieria Smithii*
  - ,, *lævigata*
  - ,, *pilosa*
- Rutaceæ—
  - *Boronia ledifolia*
  - ,, *anemonifolia*
  - ,, *polygalifolia*
  - *Correa alba*
  - ,, *speciosa.*
- Droseraceæ—
  - *Drosera peltata*
- Geraniaceæ—
  - *Pelargonium australe*
  - *Oxalis corniculata.*
- Sterculiaceæ—
  - *Lasiopetalum ferrugineum.*
- Euphorbiaceæ—
  - *Ricinocarpus pinifolius*
  - *Poranthera corymbosa.*
- Leguminosæ—
  - *Hardenbergia monophylla*
  - *Kennedya rubicunda*

Leguminosæ—
Kennedya prostrata
Hovea linearis
„ *longifolia*
Dillwynia ericifolia
„ *floribunda*
Aotus villosa
Platylobium formosum
Glycine clandestina
Bossicea heterophylla
„ *rhombifolia*
„ *scolopendria*
Acacia myrtifolia
„ *suaveolens*
„ *longifolia.*
„ *oxycedrus*
„ *discolor*
„ *juniperina*
„ „ var. *Brownei*
Gompholobium pinnatum
„ *grandiflorum*
„ *glabratum*
Pultenœa elliptica
„ *stipularis*
„ *daphnoides*
„ *incurvata*
Saxifrageæ—
Bauera rubioides.
Halorageæ—
Haloragis salsoloides.
Myrtaceæ—
Darwinia fascicularis
„ *taxifolia*
Callistemon lanceolatus
Calythrix tetragona
Leptospermum flavescens.
Rhamnaceæ—
Cryptandra amara.
Umbelliferæ—
Actinotus minor
Siebera linearifolia
Xanthosia tridentata.
Proteaceæ—
Persoonia lanceolata
Grevillea linearis
„ *sericea*
„ *punicea*
Conospermum ericifolium
„ *longifolium*
„ *taxifolium*
Symphyonema paludosum
Banksia ericifolia.
Thymeleæ—
Pimelea linifolia.
Rubiaceæ—
Opercularia aspera
Pomax umbellata.
Compositæ—
Cotula coronopifolia
Aster ramulosus
Brachycome linearifolia
Cassinia denticulata
Senecio lautus.
Goodeniaceæ—
Goodenia hederacea
„ *heterophylla*
Dampiera stricta
Velleia lyrata.
Loganiaceæ—
Logania floribunda
Mitrasacme polymorpha.

Solanaceæ—
Solanum nigrum.
Labiatæ—
Hemigenia purpurea
Westringia rosmarinifolia.
Verbenaceæ—
Chloanthes Stœchadis.
Epacrideæ—
Epacris longiflora
,, *obtusifolia*
,, *microphylla*
Styphelia tubiflora
,, *viridis*
,, *longifolia*
Leucopogon ericoides
,, *juniperinus*

Epacrideæ—
Leucopogon microphyllus
Woollsia pungens
Monotoca elliptica
Sprengelia incarnata.
Irideæ—
Patersonia longifolia
,, *sericea*
Orchideæ—
Diuris aurea
,, *maculata*
Caladenia alba
Glossodia major
Pterostylis nutans
,, *grandiflora*
Prasophyllum fimbriatum.

All the plants enumerated above, excepting *Acacia oxycedrus*, may be found on the coast line in the immediate neighbourhood of Sydney.

NOTES ON THE RUTACEÆ OF THE AUSTRALIAN ALPS.

By James Stirling, F.G.S., F.L.S., Cor. Mem. Linn. Soc. N. S. W., &c.

The remarks of Dr. Woolls on the varieties of *Crowea saligna* var. *exalata*, have induced the writer to offer the following notes on the regional distribution of the Rutaceæ over the Australian Alps. That there should exist on the highest peaks of these mountains representatives of an order whose geographic range extends over the hotter and temperate regions of the world, is perhaps a matter of general interest to students of botany. The whole of the species growing over the Australian Alps are endemic, and are comprised in the tribe *Boronieæ* of the 'Genera Plantarum.'

Zieria Smithii, Andr.

Of seven species of this interesting genus recorded by Baron Mueller in his 'Systematic Census of Australian Plants,' (six of which are found in New South Wales territory), I have identified only one, apparently the var. *macrophylla*, a Tasmanian form. It is an arborescent species which attains its greatest luxuriance in shaded heads of gullies at sub-alpine stations, generally between 2,000 and 4,000 feet above sea level. On the whole, it seems to flourish best over areas where Silurian sediments form the geological formation, as towards the heads of the Mitchell River and its tributaries in Gippsland, Victoria. At this habitat the flowers have an overpowering but agreeable aroma, while the crushed leaves and bark are exceedingly fœtid. The only slight differences which I have observed in the characters of this species, when comparing specimens procured at different altitudes and from different situations as regards humidity, dryness, &c., consist in the thickness of the leaves, and in their being covered (in the subalpine varieties) with a dense stellate down on the underside ; the petals are also more tomentose, the flowers larger, and the branches more frequently covered with prominent glandular tubercles.

According to Bentham and Mueller, (1) this species has an extensive territorial range along Eastern Australia, from Queensland to Tasmania.

BORONIA ALGIDA, F. v. M.

According to the authors of the 'Flora Australiensis,' the genus *Boronia* is limited to Australia. Of 58 species admitted by Baron Mueller in his 'Census,' more than half (35 species) flourish in Western Australia, while in the other colonies the numerical proportions are as follows :—

North Australia and Queensland..............	20	species.
New South Wales..............................	13	„
Victoria..	8	„
South Australia..................................	7	„
Tasmania..	7	„

So far as I am aware, there are only two distinct species in the Australian Alps, one of which is restricted to the highest elevations and is a very stable species, while the other extends over all elevations, and is a very variable one. The former (*B. algida*,) is a small dwarfed undershrub, found on the summits of most of the highest peaks from Mount Howitt to Mount Kosciusko, and apparently does not descend below 5,000 feet. As previously remarked elsewhere, "it appears to be governed in its distribution more by climatic conditions than by the character of the soil or geological formation." (2)

BORONIA POLYGALIFOLIA, Smith.

This ubiquitous species, which extends from Queensland through New South Wales and Victoria to South Australia and Tasmania, has also a wide altitudinal range over the Australian Alps, as from 1,000 feet in the Dargo Valley, Victoria, to the summit of Mount Kosciusko in New South Wales at elevations of 7,000 feet. From careful comparison of specimens obtained at different elevations and stations, as well as on different geological formations, I am inclined to agree with Baron von Mueller, that forms which have been ranked by other authorities as distinct species—as the *B. anemonifolia* of Bentham—have not sufficient claim to specific rank, being only differentiated forms of well-marked varieties. The division of the leaves into pinnæ in some forms, and the pubescence of others are not constant characters. And here I may be permitted to state that the result of my studies on the plants of the Australian Alps (and which I hope to be able to publish *in extenso* on some future occasion), harmonises strongly with the view "that existing species have arisen through the variation of pre-existing ones, and the destruction of intermediate varieties." (3) The geological features lend additional strength to this view. And as remarked by the illustrious author of 'The Flora of Australia.' "If all these attributes of organic life which are involved in the study, classification, representation, and distribution, and which are barren facts under the theory of special creations, may receive a rational explanation under another theory, it is to this latter that the naturalist should look for the means of penetrating the mystery which envelopes the history of species, holding himself ready to lay it down when it shall prove as useless for the further advance of science, as the long serviceable theory of special creations, founded on genetic resemblance, now appears to me to be." . . . . .

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(1) Flora Australiensis, Vol. I, p. 307.
(2) Trans. Roy. Soc. Victoria, 1884, p. 32. Phanerogamia of Mitta Mitta.

ERIOSTEMON.

This is a somewhat perplexing, and certainly very variable genus, in which Baron Mueller includes many species classed by Bentham under several genera in the 'Flora.' I incline to the Baron's classification, because the species occurring in the Australian Alps are themselves so variable, that it is easily conceivable that there has been great differentiation of form over the different areas on which this class of plants flourishes throughout Eastern Australia.

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(3) J. D. Hooker, Flora of Australia, p. 25.

I do not think that the characters upon which Bentham depends for the determination of generic, and in some cases for specific rank, are so constant as that eminent botanist believed them to be. I have frequently noticed that, even in the same plant, slight morphological differences may be seen; hence if dried herbarium specimens from different localities were handed to a botanist for critical examination, it is quite possible that minor and unimportant differences might receive marked attention as indicating supposed distinct varieties. I have elsewhere stated that climatic conditions have exerted a dominating influence in the production of varietal forms, *i.e.*, within the range of my limited observation on the flora of the Australian Alps. Further more extensive examinations of the geological structure of the area, and the correlated vegetation have confirmed me in this opinion. It remains to be seen whether more extended comparisons with the floras of other alpine areas will either prove or disprove this hypothesis.

ERIOSTEMON PHYLICIFOLIUS, F. v. M.

This dwarf shrub, which Bentham has separated from the genus *Eriostemon* into *Phebalium*, and described as *P. phylicifolium*, is almost restricted to the higher points of the Australian Alps, as on the quartz porphyries (Devonian) of Mount Cobberas, and the metamorphic schists of portion of Bogong High Plains. The lowest elevation at which I have seen it is on the quartz porphyry near Mount Sisters at 3,000 feet.

ERIOSTEMON OZOTHAMNOIDES, F. v. M.

On the banks of the Mitta Mitta at Hinnomunjee (1,600 feet), this shrub attains a height of 12 feet. It ascends, along the margin of the western Mitta Mitta tributaries, to elevations of 5,000 feet, but becomes stunted, and acquires the habit of *E. phylicifolius* at the higher elevations. This is also included by Bentham in the genus *Phebalium*.

ERIOSTEMON ALPINUS, F. v. M.

This is identical with the *P. squamulosum* var. *alpinum* of Bentham; and although stated by that authority to have a considerable range in New South Wales, as from Port Jackson to the Blue Mountains, Liverpool Plains, Clarence River, &c., it is certainly here restricted to some of the higher peaks of the Australian Alps, such as Mount Pelot, 6,000 feet, Mount Bogong, 6,500 feet, &c. I have seen specimens with more coriaceous leaves on the summit of the mountain in northern aspects, and others on the southern slope, which answered fairly to the typical description given by Bentham.

ERIOSTEMON OVATIFOLIUS, F. v. M.

I have obtained specimens of this much branched shrub from the stony ridges towards the summit of Mount Kosciusko on the intrusive granite areas, at an elevation of 7,000 feet above sea level; it extends westerly, on the summits of the highest mountains, to the sources of the Macalister River. I have not observed any forms below 5,000 feet. It is identical with *Phebalium ovatifolium* of Bentham.

ERIOSTEMON CORREIFOLIUS, F. v. M.

This species is not only separated as a distinct genus (*Asterolasia*) by Bentham, but two well-marked varieties, one a lowland form, and the other sub-alpine, have been described as distinct species (*A. correifolia*, and *A. Muellerii*). I believe the difference in the characters to be variable and inconstant, and entirely due to habitat; *A. Muellerii* occurring, as stated, in deep ravines of the granitic Buffalo Mountains and other localities, and *A. correifolia* at Port Jackson and Parramatta. Bentham directs attention to the fact that "the curious tendency to an increase in the usual number of stamens is observable in some species of both sections;" *i.e.*, the two sections into which he proposes to divide the species of *Asterolasia*.

ERIOSTEMON TRYMALIOIDES, F. v. M.

This rigid dwarfed shrub has also been placed by Bentham in *Asterolasia.* Its habitat is that already mentioned by Baron Mueller, and it is governed more by climatic conditions than by differences of soil, the species flourishing equally well on the Silurian slates of Mount Hotham, the gneiss of Mount Bogong, the basalt of Bogong High Plains, and the granite of Mount Kosciusko ; 5,000 feet is apparently the lowest altitudinal limit at which it flourishes.

ERIOSTEMON CROWEI, F. v. M.

Dr. Woolls has directed my attention to this species, and from the sample of *C. exalata*, which he was good enough to send me—obtained I believe in the Blue Mountains—I am inclined to support the view of Baron Mueller, that *C. exalata* is merely a variety of *C. saligna.* I have obtained specimens on the granitic (metamorphic) area at the junction of Cobungra and Big Rivers (Mitta Mitta Valley), which are specifically identical with the sample sent from the Blue Mountains. Although Bentham has placed this species in a separate genus, *Crowea* (Sm.), I adhere to Baron Mueller's classification as given in his 'Census.' The differences in general habit, foliage, and inflorescence referred to by Bentham in the 'Flora Australiensis,' are, in my opinion, due to differences of habitat. Altogether this is a most variable species. I have observed very important differences in the foliage and flowers of the same plant. It ascends to elevations of 4,000 feet in the Australian Alps.

ERIOSTEMON TRACHYPHYLLUS, F. v. M.

This tall shrub attains a height of 20 feet, with a trunk 6 inches in diameter, in the Wentworth Valley towards Gippsland. In some places it is the principal vegetation, covering the sunny slopes of the steep ridges (Silurian), to the exclusion of other vegetation. The wood is extremely fine-grained and dense, not unlike box-wood.

ERIOSTEMON MYOPOROIDES, De Cand.

The localities given in the 'Flora' are those where this shrub flourishes. I have not seen either New South Wales or Queensland specimens for comparison with the sub-alpine form. The glandular tubercles are extremely prominent in the local form, and the flowers pinkish in colour.

CORREA AEMULA, F. v. M.

Of the five species of *Correa*, four of which flourish in South Australia, four in Victoria, three in Tasmania, three in New South Wales, and one in Queensland, there are only three found in the Australian Alps—two lowland species struggling to higher elevations, and one a distinctly sub-alpine form. Of the former, *C. aemula* is found on the Devonian limestone area of Bindi in Tambo Valley, and *C. speciosa*, Ait., var. *cardinalis* in the Haunted Stream, also in Tambo Valley.

CORREA LAWRENCIANA, Hook.

This species is common at sub-alpine habitats all over the area, particularly towards Gippsland. It ascends to elevations of 4,000 feet, and is quite distinct from *C. speciosa*.

NOTES AND EXHIBITS.

The following note was read for Mr. John Mitchell, in correction of some remarks made in our Proceedings for June, in reference to some fossils from Bowning exhibited by him. "The late Rev. W. Clarke, F.R.S., had declared the geological formation of Bowning to be of Devonian age, having been led to this conclusion chiefly by the occurrence of *Calceola sandalina*, which European geologists recognise as a typical Devonian fossil. But above the series of rocks from which this fossil has been obtained, as well as in conjunction with it, I have collected a number of Trilobites that are typical of the Upper Silurian, particularly several species of *Acidaspis* (a genus not hitherto recorded from Devonian strata), *Harpes ungula, Staurocephalus Murchisonii, Encrinurus punctatus*, several species of *Calymene* and others, all Silurian types, whereas from the remarks referred to, it would appear that these fossils were from beds underlying the supposed Devonian strata. Hence from the evidence furnished by these fossils I am of the opinion that the formation is decidedly Upper Silurian. I may also add that, in so far as it applies to the geology of Yass, the error was pointed out some time ago by Mr. Jenkins, L.S."

Dr. Ramsay exhibited a specimen of an apparently new species of *Monacanthus*, presented to the Australian Museum by Mr. G. R. Eastway. He also exhibited eggs of *Ptilonorhyncus violaceus*, and *Rhynchœa australis*, and read the following notes on the subject:—(1) *Ptilonorhynchus violaceus*, Vieill. *(P. holosericeus*, Kuhl). "In the Proceedings of the Zoological Society of London for 1875, (March 2nd,) p. 112, where I first described the egg of this species, I laid stress on the peculiar *short wavy* and *irregular markings*, drawing attention to the somewhat similar characters exhibited on the eggs of *Chlamydodera maculata;* at that time I had only two perfect specimens from nests taken in the Wollongong district. Since then however, I have received two well authenticated sets, which show that the eggs previously described were not of the normal form, hence the necessity for describing the most common variety, in which irregular blotches and spots form the characteristic markings. The eggs vary in proportionate length, but are usually long ovals, seldom even slightly swollen towards the thicker end; the ground colour is of a rich cream or light stone-colour, spotted and blotched with irregular patchy markings, and a few dots of umber and sienna brown of different tints, in some almost approaching blackish brown, in others of a yellowish colour; the larger markings are as usual on the thicker end, but a few appear with the small dots on the thin end. In this, the usual form, the irregular short wavy lines previously mentioned seldom appear except where the larger spots or blotches are confluent; as if beneath the surface of the shell are a few irregularly shaped faint markings of slaty grey or pale lilac. The following are the measurements of two normal sets:—

1	A.	length	1·75 inch,	breadth	1·15 inch,
	B.	"	1·7 "	"	1·16 "
2	C.	"	1·82 "	"	1·18 "
	D.	"	1·76 "	"	1·15 "

(2) *Rhynchœa australis* (Gould). I have always had grave doubts as to the specific distinction of the Australian painted snipe from the *Rhynchœa* of India, and a study of the eggs of the Australian birds, compared with those from India, does not weaken my conviction. A few weeks ago Mr. George Masters drew my attention to the fact that the egg I had described and figured as that of *Gallinago* (*Scolopax*) *australis* from Mr. Whittell's collection (see P. Linn. Soc. of N.S.W., 1882, Vol. VII., p. 57, pl. III., fig. 15), was not sufficiently authentic. After examining large collections of eggs in England during 1883-84, and comparing those of the European, American, and Indian specimens of *Gallinago* with Australian specimens, I had come to the same conclusion, but was not then in a position to give a definite opinion on the subject; quite lately however on communicating with Mr. K. H. Bennett of Mossgiel, that gentleman was good enough to send me the set

I have the pleasure of exhibiting to-night; these are authentic eggs of the Australian painted snipe, *Rhynchœa australis*, and, as will be seen, are identical with the egg I erroneously described as that of *Gallinago* (*Scolopax*) *australis*. Mr. Masters exhibited a beautiful set of the eggs of this *Rhynchœa* at one of our recent meetings; the present set are similar in every respect, and were taken by Mr. K. H. Bennett himself, at Ivanhoe, on October 11th, 1885."

Mr. A. J. North exhibited eggs of *Menura Victoriæ*, Gould, from S. Gippsland, and of *Geronticus spinicollis*, Jameson, from Hillston, N.S.W.

Mr. Whitelegge exhibited some magnificent specimens of the alga *Claudea Bennettiana*, Harvey, hitherto known only from one small specimen. It was found abundantly near the Heads of Port Jackson during a recent trawling excursion in connection with the Australian Museum. Some of the specimens taken were nearly one foot in diameter. Mr. Whitelegge also exhibited a fine specimen of *Eozoon Canadense*, and slides of it and of the above-mentioned alga, under the microscope.

Dr. Hurst exhibited two specimens of *Sphenœacus gramineus*, together with a nest and three lots of eggs obtained from a mangrove swamp, near Newington, and stated that during the last few weeks he had succeeded in shooting the birds on the nest, thus establishing the identity of the eggs. At the August meeting when he exhibited some of the eggs it was suggested that they were those of *Glyciphila ocularis*. The eggs of the three takings present some differences among themselves, both as to their markings and dimensions.

Mr. Ogilby exhibited a small fish, belonging to the genus *Apogon* of which he had picked out large numbers from among prawns caught in the Parramatta River; it belongs to the subgenus *Apogonichthys*, but seems to be very distinct from any yet described. He proposes to call it *Apogon roseigaster*. Attention was drawn to the curious black lobe on each side of the tongue.

Mr. Masters exhibited some very handsome butterflies from Cairns, Northern Queensland, comprising specimens of the following species :—*Ornithoptera Cassandra*, *Papilio Erectheus*, *P. Polydorus*, and a new species allied to *P. Ambrax*, *Pieris Mysa*, *P. Argenthone*, *P. nigrina*, *Cethosia Cydippe*, *Cynthia Ada*, *Doleschallia Bisaltidæ*, and *Diadema Alimena*.

The President exhibited for Mr. Stirling, specimens of *Eriostemon trymalioides*, *E. ozothamnoides*, *E. trachyphyllus*, and *Boronia algida*, referred to in his paper. Also, two parcels of volcanic ejecta from the Taupo Zone, N.Z. One consisting of Volcanic Ash as it is called, being mainly powdered pumice, from Rotomahana, and the other of small scoria from Tarawera, evidently thrown out in a condition of fusion.

WEDNESDAY, 24TH NOVEMBER.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

The President announced that the next excursion had been fixed for Saturday, December 4th. Members to meet at the Tramway Terminus, Bondi, at 12 noon. Mr. Fletcher in charge.

DONATIONS.

"Zoologischer Anzeiger." Jahrg. IX., Nos. 232, 233. From the Editor.

"Revue Coloniale Internationale." Tome III., Nos. 3, 4, September and October, 1886. From L'Association Coloniale Néerlandaise à Amsterdam.

"Archives Néerlandaises des Sciences exactes et naturelles." Tome XXI. Livraison 1, 1886. From La Société Hollandaise des Sciences à Harlem.

"Feuille des jeunes Naturalistes." No. 192, October, 1886. From the Editor.

"Victorian Naturalist." Vol. III., No. 7, November, 1886. From the Field Naturalists' Club of Victoria.

"Annual Reports of the Department of Mines, Queensland, for the years 1884, 1885;" "Handbook of Queensland Geology." By R. L. Jack, F.G.S. Also, seventeen (17) "Geological Reports." From the Under Secretary for Mines, Brisbane.

"Proceedings of the Royal Society of Queensland." Vol. II. Parts 1 and 2, 1885; "Report of Meeting," January, 1886. From the Society.

"Proceedings of the Zoological Society of London for the year 1886." Part 2; "Transactions." Vol. XII, Part 3, 1886. From the Society.

"Proceedings of the Royal Society of London." Vol. XXXVIII., No. 238. Vol. XXXIX., Nos. 239-241. Vol. XL., Nos. 242-244. January, 1885 to April, 1886. From the Society.

"Memoirs of the Geological Survey of India. Palæontologia Indica." Ser. XIV., Vol. I., Part 3, Fasc. 6, 1886. From the Director.

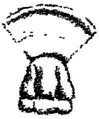
"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CIII., No. 6, August, 1886. From the Academy.

"The Scottish Geographical Magazine." Vol. II., Nos. 9 and 10, September and October, 1886. From the Hon. William Macleay, F.L.S.

"Bulletin of the American Geographical Society." No. 5, 1884. From the Society.

"Journal of the New York Microscopical Society." Vol. II., No. 7, 1886. From the Society.

"Excursions in Madeira and Porto Santo during 1823, while on his third voyage to Africa." By the late T. Edward Bowdich. From J. C. Taylor, Esq.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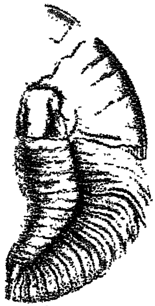
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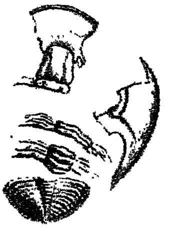
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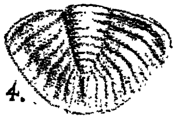
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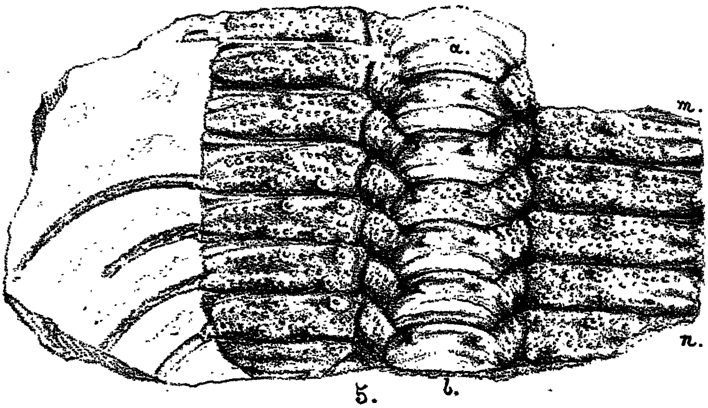

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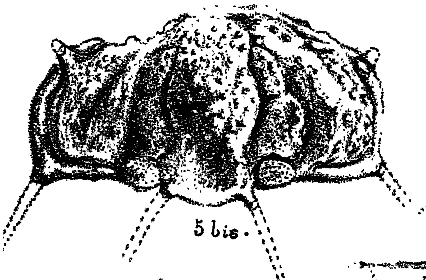
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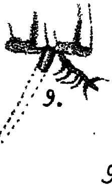
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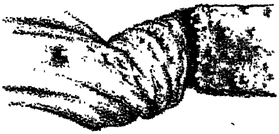
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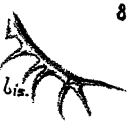
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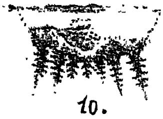
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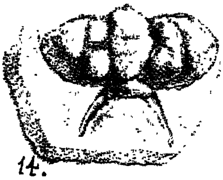
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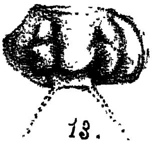
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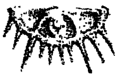
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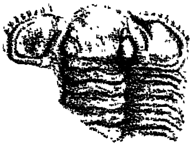
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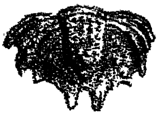
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NOTES ON AUSTRALIAN FOSSILS.

By F. Ratte, Ing. des Arts et Manuf., Paris.

(I.) NOTE ON SOME TRILOBITES NEW TO AUSTRALIA.

Lichas sinuata (1), n.sp.

(Plate XV. fig. 15.)

This beautiful fossil has been disengaged from blocks of limestone containing silicified fossils, collected near the Wellington caves. Unfortunately the heads, after having been detached from the stone by the use of hydrochloric acid, fell to pieces, and only a few pygidia remained perfect. The resemblance to *L. palmata*, Barr., is very strong. (See Barr. Syst. Sil. p. 599, pl. 28, fig. 9, and de Kon. Foss. Pal. Nouv.-Galles, &c. p. 57).

Lichas palmata is included by Barrande in his "Etage E, Faune III," and in his "Etage D, Faune II," where it formed colonies. In the Wellington limestone our species is accompanied by a small *Rhynchonella* which is very common, and resembles *R. Wilsoni*; and a Spirifer resembling *S. elevata* more than *S. crispa* is also very common.

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(1) Since the above was in type, I found in Quart: Journ. Geol. Soc. 1850, p. 235, the description of *Lichas hirsutus*, Fletcher, the pygidium of which is very similar to the Wellington fossil. However, from Pl. XXVII, bis, fig. 2, it will be seen that this species is very variable. It is from the Wenloch limestone of Dudley. In consequence of the deep sinuses which our fossil presents at the posterior angle of the lateral spines, considering it a distinct and new species, I suggest for it the name of *Lichas sinuata.*

The following are from Bowning, and were obtained by Mr. J. Mitchell, who has presented a number of specimens to the Australian Museum :—

PROETUS ASCANIUS, Cord. (?)

(Plate XV. figs. 1-4.)

Barr. Syst. Sil. pl. 15, figs. 41 and 42.

The specimens drawn are represented in Mr. Mitchell's collection by one specimen about 11 mm. long, and another about 17 mm., with other fragments of the same.

The head presents a character which I find also in *Proetus ascanius* represented in Barrande by the head only. While in all the other species represented, the distance between the extremity of the glabella and the front is small, and, at any rate, much shorter than the length of the glabella itself; in the above and in the Australian species, this distance is exactly equal to the length of the glabella.

As to the pygidium, it resembles that of *P. decorus*, Barr. (pl. 17, fig. 13) but differs from this only by having eight costæ on each side of the axis instead of seven or less ; the axes are the same, and I think it hardly possible to distinguish a detached pygidium of that species from one of the Australian specimens. Fortunately two of these are nearly complete, and in the absence of a complete figure of *P. ascanius,* I must refer the species which has been obtained from Bowning, provisionally to *P. ascanius* with a (?.)

Barrande includes the last species in his "Etage F, Faune IV."

ACIDASPIS VERNEUILI, Barr.,

or

ACIDASPIS VESICULOSA, Beyr. (?)

(Plate XV., figs. 5-14.)

Barrande, Syst. Sil. Vol. I. pp. 710-715, pl. 38, figs. 1-6, 13-15 and 19.

Represented by a head, (figs. 5 and 7), and pleuræ separate.

The pygidium, which would enable one to distinguish between these two species, has not yet been found.

The pleuræ, however, although not complete, belong to a large specimen, and show remarkably well preserved ornaments, including some of the spines, and the spiny appendages adjacent to the long spines (fig. 9).

The representation of these specimens, therefore, was especially interesting in consequence of these details, but still more, as there seem to be traces of articulation between the axis and the pleuræ, a disputed point on which I will insist hereafter. The head does not belong to the same specimen as the pleuræ; the head corresponding to the same specimen as these last would be exactly one-half greater (× 1·5) in linear dimensions than the one represented, and the total length of the restored specimen from the front to the end of the pygidium, exclusive of the ornamental spines, would be nearly 120 mm. or about 4¾ inches. This is the largest size quoted by Barrande (l.c., p. 713) for *A. Verneuili*, while *A. vesiculosa* may attain to one-third more in size (× 1·33), or over 6¼ inches.

Our specimen belongs to the largest Trilobite hitherto recorded from Australia; the next largest forms I have seen, being probably some species of *Bronteus* and *Phacops* from the same locality.

This makes us more and more hopeful as to the richness of our Silurian fauna.

There are some few differences between the specimens alluded to, and Barrande's figures of *A. Verneuili* and *A. vesiculosa*; they are as follows:—

1. In the head the larger tubercles or spines do not seem to form nearly regular rows as in these species, a point rather difficult to decide in consequence of the bad state of the specimen.

2. The rounded nodules which belong to the occipital ring although separated from it and placed at the back of each of the posterior lobes, are finely granulated without any addition of larger tubercles as in the figures given by Barrande.

3. In the thorax, the long spines which terminate the pleuræ are more distinctly arcuate than in the same figure of *A. Verneuili*.

4. The four larger tubercles on each of the pleuræ are regularly disposed as in the above, but show, what is not seen in Barrande's

figure, a ring of smaller tubercles on an elevated surface, from four to eight in number, around each of the four prominent ones (fig. 5 bis).

Now I come to the supposed articulation between the axis and the pleuræ as shown in our specimen.

Nearly fifty years ago, Emmrich in "De Trilobitis Dissertatio, &c." was of opinion that such an articulation existed, and he mentions *Ogygia Buchi*, and *Conocephalites Sulzeri*. Burmeister combated that opinion, and Barrande confirmed the views of the last except in the case of *Arionellus ceticephalus* (l.c., p. 166, pl. X., fig. 16.)

However, one cannot help being struck in examining the specimen in question, at the great resemblance to an articulation of the junction of the axis with the pleuræ. It seems as if the test (or its different joints) had been covered by a thin epiderm as admitted by Burmeister (Barrande l.c., p. 231), and that this epiderm is wrinkled at the articulations as shown in fig. 5, and especially in the enlarged sketch, fig. 8.

Locality: Bowning.

It may be added that *A. Verneuili* is included by Barrande in his "Etage E, Faune III," and *A. vesiculosa* in his "Etage F, Faune IV."

ACIDASPIS VERNEUILI.

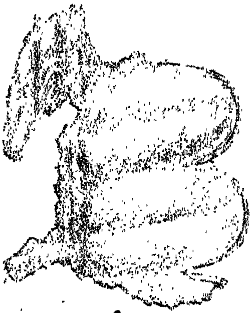
(Plate XV. fig. 10.)

This species is also represented by a small pygidium 9 mm. in width, corresponding to a specimen 26 mm. long, the spines excluded. It has seven barbed spines.

The following specimens are more doubtful.

(Plate XV. fig. 11.)

A head with part of thorax corresponding to a specimen about 14½ mm. in length, measures 12 mm. across from the origin of the genal points, and only 4 mm. from the front to the border of the occipital ring; it is therefore three times broader than long. This character corresponds with broad cheeks and prominent eyes, and suggests *A. Prevosti*, (Barr. pl. 39). The occipital spines, however, are not seen.



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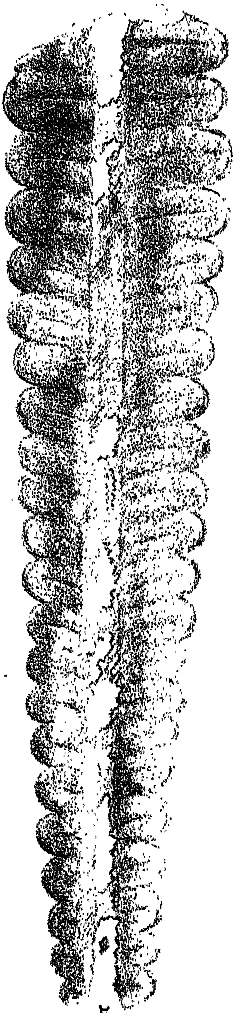

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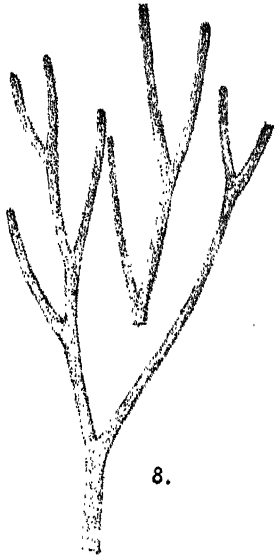

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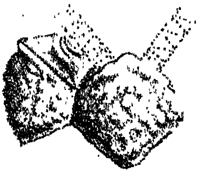

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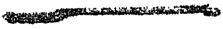

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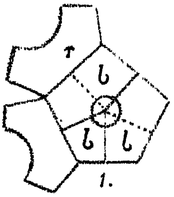

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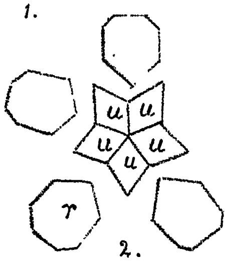

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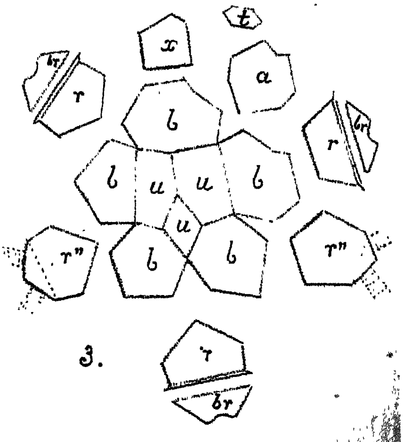

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F. Ratte, Del. & Lith.

(Plate XV. fig. 12.)

A small pygidium which has left its impression in a hollow, is only 6 mm. broad, corresponding to a little over 10 mm. from front to end, the spines not included. These are 12 in number, four between the principals, and three on each side. They, as well as the pygidium, are covered with numerous irregular tubercles. This and other characters correspond to *A. Prevosti*, (Barr. pl. 39, and Suppl. pl. 12.) But, having only figures to compare with, I can arrive only at doubtful conclusions. Thus the specimen in question shows that the two thickened parts of the principal spines on the limb of the pygidium are continued into a pad along the extreme border of the pygidium between these spines, and join in the middle the extremity of the axis, which is not the case in Barrande's figure. *A. Prevosti* is placed by Barrande in his "Etage E, Faune III."

(Plate XV. figs. 13 & 14.)

Two heads, one 12 mm. between the ocular lobes, the other a little smaller, and corresponding to individuals about 26½ mm. and 24 mm. respectively, are very much alike. One shows the casts of two occipital spines, which in the other are broken, but in the first the anterior part of the head is missing, while in the second this part is terminated by a straight line as in *A. mira*.

(II.) SECOND NOTE ON *TRIBRACHIOCRINUS CORRUGATUS*, RATTE, AND ON THE PLACE OF THE GENUS AMONG PALÆOCRINOIDEA.

TRIBRACHIOCRINUS CORRUGATUS, Ratte.

(PLATE XVI.)

Proc. Linn. Soc. N. S. W., Vol. IX. Part 4; Wachsmuth and Springer, "Revision of the Palæocrinoidea," Proc. Acad. Nat. Sc. Philad. 1879 to 1886 (1).

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(1) Revision,	Part I,	Proc.	Acad.	Nat.	Sc.	Phil.	1879, p. 226.
,,	Part II	,,	,,	,,	,,	,,	1881, p. 177.
,,	Part III	,,	,,	,,	,,	,,	1885, p. 225.
,,	Part III (Section 2)	,,		,,	,,	,,	1886, p. 64.

This genus being hitherto entirely Australian, it will be suitable to complete the description that I have given of the second species known, by stating the opinion of Messrs. Wachsmuth and Springer, (whose "Revision of the Palæocrinoidea," has just reached its end), and the true place which, according to these gentlemen, the genus considered ought to occupy in the order Palæocrinoidea.

If we consider the calyx of a crinoid, we find that the base, to which the stem is attached, is composed of a certain number of plates. Let us take, for instance, *Cyathocrinus*, and *Tribrachiocrinus*, both represented in our Carboniferous. In *Cyathocrinus* the base is formed of five plates, and in *Tribrachiocrinus* of three plates, but in both cases the figure is a pentagon. In some genera the figure is an hexagon, though the former is the more frequent. The number of divisions, although most frequently five or three, is sometimes four or another number.

From these considerations the late Prof. Angelin divided the Silurian Crinoids of Sweden into four sections: Trimera, Tetramera, Pentamera, and Polymera. But the progress in the study of fossil crinoids, due principally to the authors of the 'Revision,' and to Dr. P. Herbert Carpenter, has led to a classification upon more natural principles. The last-named author in a paper on the 'Oral and Apical systems of the Echinoderms,' "considers the basals of recent crinoids to be homologous to the genital plates, and the radials to the ocular plates of the Echini, and he traces the homology to the Palæocrinoïdea, in respect to which, however, he advances the opinion that the first ring of plates resting upon the upper stem segment, which have heretofore been nominated *basals* are in many types not basals at all. He regards the set of plates which lie next below the radials as the true *basals*, no matter whether they rest directly upon the stem, as in *Platycrinus*, or are separated from it by another ring of plates, as in *Cyathocrinus*; so that the *sub-radials* of most American authors, or *parabasals*, as they are generally termed in Europe, are *basals* according to his view. The lowest or proximal ring of plates, in types having *sub-radials*, he calls *underbasals*, and these he believes to be unrepresented in the other types of Crinoids and all other Echinoderms." . . . .

"Carpenter's reasoning in regard to the basal plates is, that, as the genitals in the Echini, and the basals in most Palæocrinoids, which are generally considered to be their homologues, are situated *interradially* with regard to the general symmetry of the body, we must expect to find the genitals in Palæocrinoids in the same relative position; and that, in forms like *Cyathocrinus*, which have two rings of plates below the radials, the lower or proximal plates are situated in line with the radials, and hence cannot be the true basals. He holds that the same order of plates cannot be radial in one genus, and interradial in another. This argument is unquestionably a very strong one, and we (the authors of the "Revision") are enabled to confirm it by a number of interesting observations." (1)

Although I feel justified in giving these quotations, on the ground that they lead to a readily useful end in a new and better understanding of fossil crinoids, I cannot follow the authors in illustrating their numerous observations in support of Carpenter's views, and I beg only to record briefly a few simple instances.

It has been said that the basals must be *interradial* in position. Then in some genera which have no underbasals, but which have three irregular basals forming a pentagonal figure, namely, *Platycrinus* (fig. 1), *Symbathocrinus* and allied forms, it is necessary to show that these basals are interradial in position; this is done by supposing the two larger plates formed by the conjugation of two smaller pieces respectively; if, therefore, they are subdivided as shown by dotted lines, it will be understood that the resulting five pieces will be interradial in position. In *Belemnocrinus*, and in the recent genus *Rhizocrinus*, the basal pentagon is formed of five pieces, which are, therefore, naturally interradial in position. In *Eucalyptocrinus* and *Melocrinus*, the base of which is also a pentagon but composed of four plates, one being larger, this larger plate can be divided, and then all the basals become interradial in position.

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(1) Revision, Part I. pp. 239, 240.

In *Actinocrinus* the basal disc has three plates forming an hexagon, and the subdivision of these plates will form six basals instead of five, but then the anal plate comes in as shown in the 'Revision' (pl. XV. fig. 4) requiring two plates, which may be considered equivalent to one, for its support, and the structure remains in principle the same as in the foregoing cases. Let us now consider forms provided with underbasals.

In forms like *Cyathocrinus*, *Rhodocrinus* (fig. 2), etc., in which the ring of plates next to the stem is formed of five segments, these plates are radially situated as underbasals, while the next ring is composed of the five basals interradially situated. In most of the *Ichthyocrinidæ* the lower ring is composed of three plates, but then, if we divide them by sutures into five, about equal plates, these five will be radially situated as underbasals, and exactly equivalent to the corresponding set of plates in *Cyathocrinus*, etc.

The authors of the 'Revision' continue as follows:—

"It is now a very important fact that these two rings of plates—the first radials and the interradial set of plates next below them—are the only ones which are found in *all crinoids from the earliest geological ages to the present time*. It thus appears that the evidence derived from the embryology of the Pentacrinoid, and the observed mode and order of development in the Palæocrinoids during individual life, is fully and beautifully confirmed by the geological history of crinoids."

"All this evidence seems to us (Wachsmuth and Springer) to be conclusive, and to prove satisfactorily that the two rings of plates regarded by Carpenter as genitals and oculars, are the fundamental parts in the aboral side of the calcareous skeleton, and that the subsequent orders of radials and interradials are to be considered as supplementary to them, and as the products of growth in the individual and development in geological time."

"Our conclusions being thus in harmony with Dr. Carpenter's views, we think it both logical and expedient to adopt his terms, and call the first ring of plates below the radials *basals* in all cases, and the second ring below, or the proximal plates when there are two rings, *underbasals*, thus discontinuing the term *subradials* altogether." (1)

It is scarcely necessary to add that the arrangement of the plates and their symmetry will be fully understood, provided that the radials should be properly traced. If in a fossil crinoid we know the basals, we will say that the radials are "all the plates of the body above the basals, radially situated," (2) or in other words we will say that the radials are those plates not in contact with the stem which are situated in vertical line below the arm plates which determine the radiating figure of the animal.

In my description of *Tribrachiocrinus corrugatus* (3), I used terms previously adopted by different authors on crinoids, which are not only in discordance with the new terminology, (4) but are henceforth misleading. Therefore I beg leave to rectify them here.

At page 1160 I have given a schematic table of the arrangement of the different parts composing the outer structure of the calyx. In that table I used letters and signs to represent these different parts, as well as on plate 68. Therefore in perusing this table, together with the following corresponding terms, one will be enabled to understand the revised diagnosis of the genus as given by Wachsmuth and Springer. (5)

At page 1160 (Proc. Linn. Soc. Vol. IX. Part 4.)

Instead of:	*Read:*
Basal pieces	Underbasals
Sub-radial plates or First Costals	Basals
First anal plate or Intercostal	Azygous plate
Interradials or Interscapular, CD, EA.	Radials
Interradials : (B. † AB.)	Anal (the lower in the diagram pl. 68)
Second anal	Plate of ventral tube
Second Radials (marked at bottom of table by the sign †)	Brachials (three over the Radials BC., DE. and A. † AB.) and two probably ankylosed brachials over the Radials CD, and EA.

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(1) Revision, Part I. p. 244.
(2) Revision, Part I. page 250.
(3) Proc. Linn. Soc. N.S.W. Vol. IX. part IV., page 1158.
(4) Revision, Part I. p. 249.
(5) Revision Part III. Sect. 2, p. 175.

To accompany this I give a revised figure of the diagram, and a correct sketch of one of the radials with probably ankylosed brachials as suggested by the authors of the Revision. (1) (Pl. XVI, figs. 3 & 4.)

The suggestion that the two radials symmetrically disposed are "compound plates, each representing a radial and a bifurcating brachial, which probably became ankylosed," (2) seems to me perfectly acceptable, but although I am not ready to discuss the opinions of, no doubt, the best authorities on crinoids, I may perhaps remark that the ankylosed brachials are very much reduced in size and thickness, and that, if, according to Messrs. Wachsmuth and Springer, "they evidently supported two arms, one at each side," these arms were probably abortive, or at any rate very much reduced, or reduced next to nothing, as I do not see any sockets for them, nor any strength to support them. This does not at all mean that the plates in question were not brachials, but that they probably became ankylosed through having lost their functions.

At p. 1163 (*l.c.*) I have spoken of small covering plates represented in plate 68, figs. 2 and 3. They are no doubt plates, as their impression appears distinctly on the outer as well as on the inner cast. In my paper, comparing these plates with those of the flattened vault in *Rhodocrinus* as represented in de Koninck's work, I took them to be vault plates. But, according to Wachsmuth and Springer (3) "if they are plates at all, they formed a part of the disk, and as such were covering pieces"—I cannot follow the authors in the study of pieces which are rarely observed in specimens of common occurrence, although of great importance in the classification. For this reason, and in consequence of the complicated arrangement of these pieces, the evidences given by previous writers are very confusing, and light is thrown upon the subject in Part III. of the 'Revision' in the chapter treating of the "Interradial, Interaxillary and Interbrachial Plates" (p. 237), and in the chapter treating of the "Ventral Perisome" (p. 281).

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(1) Revision, Part III. Sect. 2, pp. 174, 175, and plate VI. fig. 5.
(2) Revision, Part III. Sect. 2, p. 174.
(3) Revision, Part III. Sect. 2, p. 174.

Although it might appear natural to extract and include here the revised generic diagnosis of *Tribrachiocrinus*, I think that it does not sufficiently differ from my description, while it takes nearly the whole of page 175 of the 'Revision.' I think it more useful to give here a glance at the classification in order to point out the place of this genus in the Palæocrinoidea. I may remark here that I now use the revised orthography of the generic name which needs no comment, the first spelling being obviously erroneous.

The generic name *Tribrachiocrinus* was proposed by Professor M'Coy on the supposition that there were only three arms; but, if according to Wachsmuth and Springer, the two ankylosed brachials supported two arms each more than mere rudimentary, then our fossils would have had three large and four smaller arms. This being so, the name etymologically considered, is now a misnomer; nevertheless it conveys to the mind the notion that there were three conspicuous arms.

In the 'Challenger Report,' (Zoology, Vol. IV. pp. 149-154,) will be found, according to Dr. Carpenter, the distinctions between Neocrinoidea and Palæocrinoidea. Among these much stress is laid, according to the 'Revision' (1) upon the symmetry of the calyx in the Palæocrinoidea, which Carpenter attributes to the intercalation of an anal plate. To this there are many exceptions. But, among other differences there is one absolute, that in the Palæocrinoidea the mouth and disk ambulacra are completely closed, while in the Neocrinoidea the ambulacra have open food grooves.

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(1) Rev. Part III., p. 294.

The authors of the 'Revision' divide the Palæocrinoidea into three suborders (1) that I will arrange synoptically as follows :—

A. Plates of the test articulated: 2nd Sub-order ARTICULATA.

<table>
<tr><td rowspan="3">B. Plates of the test united by suture.</td><td>Lower arm plates incorporated by means of interradial plates so as to form a part of the calyx. Underbasals frequently undeveloped, etc.</td><td colspan="2">(2 families)
Ex. : *Ichthyocrinus*.
1st Sub-order CAMARATA.
(10 families)
Ex. : *Platycrinus*.</td></tr>
<tr><td rowspan="2">Arms free from the first radials. Calyx composed exclusively of basals, frequently underbasals, five radials, five interradials ventrally located, and one or two azygous plates, etc.
3rd Sub-order. INADUNATA. (Sub-divided.)</td><td>Ventral covering consisting of comparatively few pieces. Disk subtegminal instead of being extended into a lateral sac, etc.</td><td>LARVIFORMIA.
(4 families)
Ex. : *Cupressocrinus*</td></tr>
<tr><td>Perisome partly or wholly exposed, the interradial plates either covering the perisome, or this partly covering them Portions of the disk penetrating the calyx posteriorly by passing out through the anal opening and forming either a balloon-shaped or a tubular sac, composed of well-defined plates etc.</td><td>FISTULATA.
(10 families)
Ex.: *Cyathocrinus*
Poteriocrinus
Tibrachiocrinus
Encrinus.</td></tr>
</table>

Tribrachiocrinus had been broadly compared with *Cyathocrinus*, and its correct affinities had not been understood before they were made out by the American scientists who say in the Revision (2)—" The radials enclose the azygous plate proper, and an anal piece as in most of the Poteriocrinidæ. *Tribrachiocrinus* is not such an aberrant genus as it was supposed to be. It is closely allied to *Cromyocrinus* and *Agassizocrinus*, and like them has large basals, comparatively small radials, and an unusually large azygous plate, followed by the anal piece and proximate plate of the ventral tube. It differs, however, from both genera in the number of underbasals, and the peculiarities in the radial regions which have been mentioned."

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(1) 'Rev.' Part III. Sect. 1, pp. 304, 305, 313-315.
'Rev.' Part III. Sect. 2, pp. 65, 66, 78, 81-82, 116, 117.
(2) 'Rev.' Part III. Sect. 2, pp. 174, 175.

And of the genus *Cromyocrinus* (1) they say: " *Cromyocrinus* is closely allied to *Agassizocrinus*, to which it holds a similar position as *Pentacrinus* to *Antedon*. We doubt if *Cromyocrinus* ever became detached from its column, while all species of *Agassizocrinus* lose their column comparatively early."

In harmony with the above lines the authors say further in their diagnosis of *Tribrachiocrinus* " Column apparently small and circular."

In fine, according to these authors, our fossil is placed in the family *Poteriocrinidæ* which, in the subdivision *Fistulata* of the sub-order *Inadunata*, comes next to *Cyathocrinidæ*, and is followed by *Encrinidæ*.

Before ending this note I must add to the description of *Tribrachiocrinus corrugatus* a detail which is supported by a closer examination of the original, namely that the ridges are provided along their summits with a line of small tubercles, and that the isolated tubercles support ordinarily a smaller tubercle at their summits.

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(1) Part III. Sect. 2, p. 171.

(III.) NOTE ON TWO NEW FOSSIL PLANTS FROM THE WIANAMATTA SHALES. (1)

JEANPAULIA (?) PALMATA sp. nov.

(PLATE XVII.)

I do not think I shall exaggerate, when I say that the specimen in the Australian Museum, which is here represented, is the most beautiful specimen of the most singular genus of fossil plants ever found in Australia.

A single frond is nearly 10 inches broad and nearly one foot from the top to the lower end of the stem, which seems as if it were still attached to the soil by its root. The general outline is that of a palmate leaf, and the number of divisions is not less than 58, reckoning the principal, secondary, and minor sub-divisions.

But before proceeding any further I must guard against hastily referring this plant to any known genus. At first I thought I could identify it with *J. bidens*, T. Woods (2) from the Burnett River coal seams, but similar plants have been several times shifted into widely different orders before evidence could be produced of their organs of fructification. Count de Saporta (3) has included *Jeanpaulia* and *Baiera* together as ferns, but this last genus is now considered to be coniferous.

Our specimen has a well proportioned stem, vertical, slightly curved at the base, gradually expanding at the top and giving rise to a palmate frond formed of divisions radiating from a centre to the periphery of a half circle.

The lateral sub-divisions or rays are from 4½ to 5½ inches long, and gradually increase in length to the apex, where the longest is 7 inches from the centre.

The frond is divided into about twelve principal rays at from five to twenty millimetres from the origin. One of these divisions seems to begin far higher (apparently the tenth from the left), but it might

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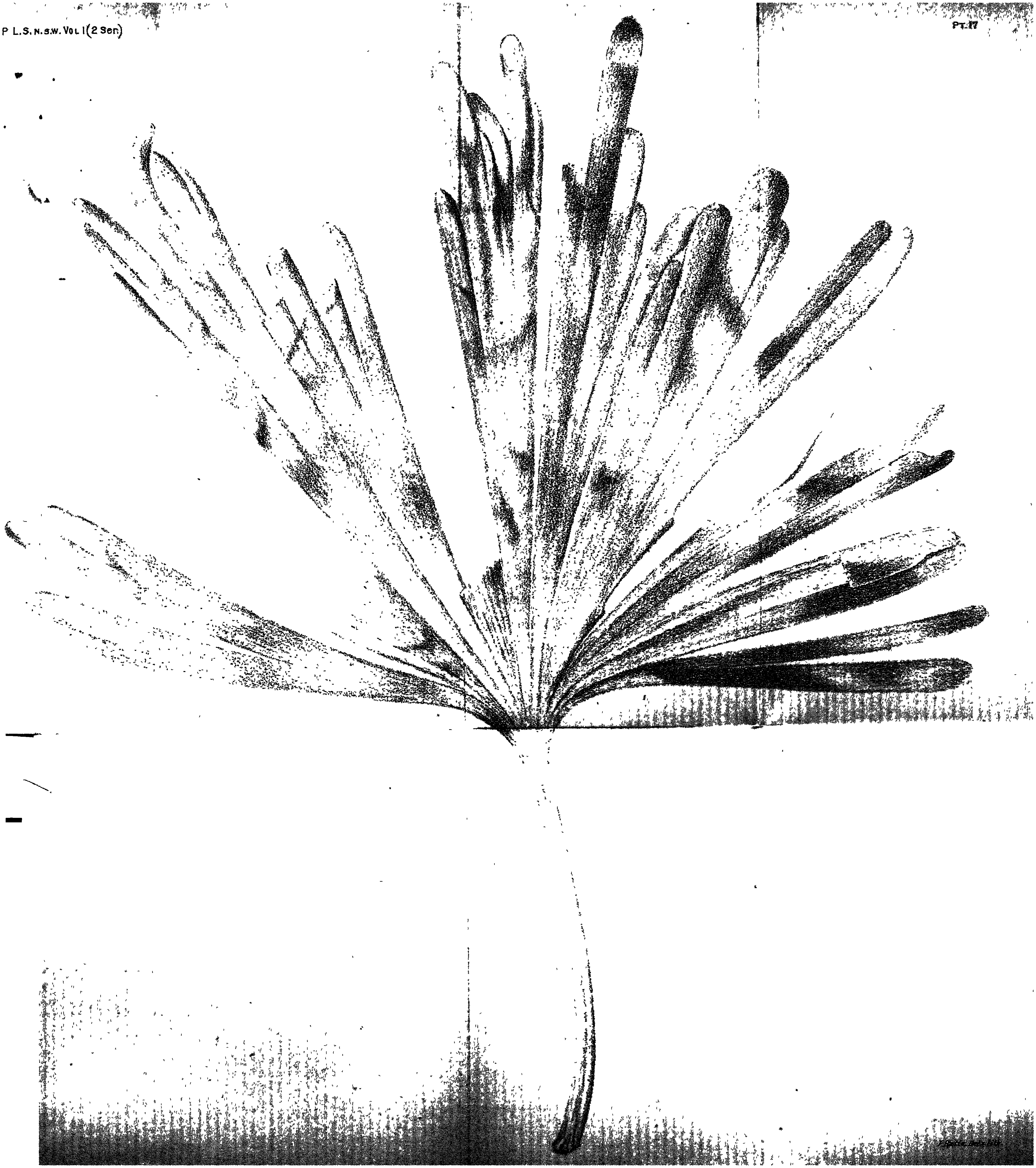
(1) Mr. Wilkinson has suggested to me that these might belong to the Hawkesbury Sandstone.

(2) On the Fossil Flora of the Coal Deposits of Australia, Linn. Soc. N.S.W. Vol. VIII. Part 1, p. 132, pl. 4, fig. 3.

(3) Paleont. franc. Terr. juras. Veg. Tome I. p. 161.



be due to a mistake in recording them, by reason of the divisions covering each other. Then at a distance of four centimetres more or less from the centre, a secondary sub-division occurs, and each of the rays thus formed is again divided at an average distance of from five to eleven centimetres from the centre, the average sub-division taking place at seven or eight centimetres. Each of these sub-divided rays is obtuse, rounded or digitiform at the apex. They are not as a rule equal, but their length follows the general outline of the frond. Some of the principal rays, however, (apparently the fifth and the ninth) seem to have their divisions shorter (the ninth evidently), than the proximal ones. The principal sub-divisions are not all regularly dichotomous, but those in the middle (apparently from the fourth to the eighth from the left) have some of their ultimate divisions in three instead of two parts, and this slightly changes the form of the apex, which is sometimes narrower, less obtuse, and bent or slightly incurved on one side. The width of the ultimate ordinary sub-divisions is from 4½ to 10 millimetres, and in the secondary rays which have three sub-divisions, they are still narrower, being from 3 to 5 millimetres.

The following table will give as far as possible the measurements and number of divisions, the principal rays being numbered as before from the left, from 1 to 12 :—

No. of Order of principal ray.	Number of divisions and sub-divisions.	State of preservation.	Length.
1	2 × 2	entire	145 mm.
2	2 × 2	broken	?
3	2 × 2	broken	?
4	2 × 3	entire	165
5	2 × 3	partly broken	150 (about)
6	2 × 3	broken	?
7	2 × 3	entire	160
8	2 × 3(4)	partly broken	165
9	2 × 2	entire	155
10	2 × 2	partly broken	165
11	2 × 2	entire	135
12	2 × 2	entire	120

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(1) There seem to be here, only five instead of six ultimate sub-divisions.

The frond is seen from its upper surface which is coriaceous, bright, nearly smooth, and has the external appearance of some leaves of *Calamus*. This upper surface is covered with longitudinal venations slightly marked, some, however, irregularly disposed, being more conspicuous; the under surface, on the contrary, shows by its impression that the venation was very regular and very close, the distance between the veins being less than half a millimetre.

Although the ultimate bidental subdivisions of the frond is very much like that in *Jeanpaulia bidens*, T. Woods, there is a feature in our plant which would strongly militate against its being a fern. It is that the frond seems as if it were split, as happens in some conifers and palms. It is indeed very difficult to see the point of separation of the divisions, and I could not see any bifurcating vein there.

According to de Saporta (l.c., p. 463)—"Les *Jeanpaulia* et *Baiera* se montrent avec le Rhétien à l'extrême base du Lias Inférieur; ils reparaissent ensuite dans l'Oolithe et leur existence se prolonge jusque dans le Wéaldien. Si l'on maintient la distinction des deux genres, il semble que les *Jeanpaulia* règnent seuls dans l'Infra-Lias, qu 'ils sont associés aux *Baiera* dans l'Oolithe et que ceux-ci leur survivent dans le Wéaldien. Au total, les *Jeanpaulia* constituent un groupe essentiellement Jurassique."

By coincidence it happened that Mr. R. M. Johnston, F.L.S., read lately before the Royal Society of Tasmania, a paper entitled "Fresh contributions to our knowledge of the plants of Mesozoic age in Tasmania," (1) in which the author, among other plants from the coal seams at Newtown (Jerusalem Coal Basin), describes a species of *Baiera* (*B. tenuifolia*, Johnston), which he considers as a conifer. It has not a palmate frond like *Baiera digitata* (Brngt.) Schenk, (2) and has more the outline of *Jeanpaulia Munsteriana* (Presl.) Ung. on a smaller scale, while the leaves are narrower comparatively than in this last plant.

Mr. Johnston had the kindness to send to the Museum the following new species, including his *Baiera*:— *Thinnfeldia*

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(1) Proc. R. S. Tasm. Oct. 11, 1886.
(2) Schimper l.c., p. 423.

odontopteroides var. *obtusifolia*, *Sagenopteris salisburoides*, and *Rhacophyllum coriaceum*, which can be seen in the Museum.

CYCADOPTERIS (?) SCOLOPENDRINA, n. sp.

(Plate XVI. fig. 5.)

The other fern represented resembles the genus *Cycadopteris*, Zigno (1), and also *Lomatopteris*, Schimper (2), to which this last author, (according to Saporta) has wrongly referred some true *Cycadopteris*.

In both genera the frond is thick, and the pinnules are not deeply incised, their confluence taking place at a distance from the rachis; and also in both genera the pinnules are thickened by a border, the true nature of which, as distinguishing the two genera from each other, it is difficult to understand from a fossil in which the characters have been obliterated by pressure, but which is compared by Zigno to that in *Myriopter's* (*Cheilantheæ*).

There is also a great difference in the mode of venation, which in *Lomatopteris* is reduced to a single principal vein in each pinnule, while in *Cycadopteris* there is a secondary nervation.

Our fossil also resembles some species of *Odontopteris*, and some of *Pecopteris* from which it is distinguished by the thick border.

As this fossil is represented in the Museum by only a single specimen, I could not spare much of it for an examination of the hidden under-surface in order to ascertain whether there were secondary veins or not, which would place it as *Cycadopteris* in the first, or *Lomatopteris* in the second case. This examination failed to distinctly prove the presence of a secondary nervation, although the fragmentary appearance of the frond would make it difficult to ascertain it beyond doubt. In one of the pieces examined, the principal vein of the pinnule was distinct enough, and no vein was seen to spring from it. But as I have said above, the fleshy frond is entirely transformed into coal, which is much fractured into geometrical fragments as shown in fig. 7; and it would be impossible to have recourse to the delicate macerations which would have resulted in the separation of the epidermis for microscopical examination through transmitted light, as Saporta did. (1)

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(1) Saporta, l.c , p. 417. Schimper, l.c., I. p. 472.
(2) Saporta, l.c., p. 391. Schimper, l.c., p. 472.

Among the *debris* of plants from the Wianamatta shales, from which Mr. Whitelegge makes such beautiful slides, it might not be impossible to find some thinner fragments of the same plant in which it would be more easy to distinguish the venation.

For the diagnosis of the two genera under notice, I will do no more at present than refer to the authors already quoted, but I will extract from Saporta's work his own untranslated interpretation of the border of the pinnules.

At p. 395 he says—" Evidemment voisins des *Cycadopteris*, . . . les *Lomatopteris* s'en distinguent et par l'absence de nervures secondaires dans chaque pinnule et aussi par le repli marginal, remplacé chez le premier de ces genres, ainsi que nous avons pu nous en assurer, par un ourlet (hem ?) cartilagineux où viennent se perdre les veines sorties de la médiane." And at p. 419—" Le bourrelet (pad ?) cartilagineux qui sert de marge aux pinnules des *Cycadopteris* constitue aussi un caractère fort net empêchant qu'on ne puisse confondre ce genre avec celui des *Pachyteris*, &c. . . . . ou bien enfin avec les *Lomatopteris* dont la bordure résulte d'un repli de la marge, &c."

Lastly I will add that the character which induced me in the first instance to regard the fossil as more likely allied to *Cycadopteris* than to *Lomatopteris*, in presence of the uncertainty as to the existence of a secondary nervation, is, that the border appears visible on the upper surface of the frond as a duplication or a folding of the epidermis, but when the under surface is disengaged, the border is seen also as a hem. As no specimens are available here for comparison, I give an enlarged section of what can be seen (fig. 6 bis) of that border which, in the meantime, leaves the identification a doubtful matter.

I intended to give a provisional description of one of the fishes found with these plants, which has already been exhibited before the

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(1) l.c. p. 393.

Society, the specimen being beautifully preserved and apparently one of the *Palæoniscidæ*, but of puzzling affinities. I have, however, not yet found sufficient works of reference on the subject.

Although the fins provided with fulcra, and the scales remind us of some species of *Palæoniscus*, the tail does not seem a perfectly heterocercal one, and resembles, in some respects, and on a superficial examination, that of a fish widely separated from it in other respects, viz., *Lepidotus*, which is understood to have had an homocercal tail. The rays of the tail and fins are divided at about half their length into fan-shaped expansions, as shown distinctly in Agassiz's fig. of *Lepidotus* (Vol. 1, tab. C.), in *Megalurus* (Vol. 1, tab. E), in some species of *Palæoniscus*, and in other fishes.

With this fish are found some others of the same family, and the well-known *Cleithrolepis granulatus* of the Hawkesbury sandstone.

I may also add that the plants found with these fishes include also a specimen of *Thinnfeldia odontopteroides*, and that the genera *Jeanpaulia* and *Cycadopteris* or *Lomatopteris*, to which they are supposed to belong, are considered as Jurassic in Europe. The first one, however, is also found in the Rhætic, which is considered as Triassic; and the second may likewise have come into existence in the Trias also, (since it would not be the first instance where plants have failed to determine the age of a formation) if more importance than necessary was given to its being considered Jurassic in Europe, as above stated.

EXPLANATION OF PLATES.

PLATE XV.

Fig. 1.—*Proetus Ascanius (?)*. × 2.

Fig. 2.—*Proetus Ascanius (?)*. A smaller specimen. × 2.

Fig. 3.—Head of same without the movable cheeks. × 2.

Fig. 4.—Pygidium (probably of same species). × 2.

Fig. 5.—Part of body of *Acidaspis Verneuili (?)* drawn from a specimen (the largest Australian trilobite) in Mr. J. Mitchell's collection, Bowning. Natural size.

Fig. 5 bis.—Head of *Acidaspis Verneuili (?)* corresponding to a smaller specimen.

Fig. 6.—Section *a b*, of part of the axis.
Fig. 6 bis.—Sections *m n*, of part of the pleuræ.
Fig. 7.—One of the principal tubercles surrounded by smaller ones. × 5.
Fig. 8.—Junction (articulation ?) of the axis with the pleuræ. × 2.
Fig. 9.—Small barbed spines placed on the front of each of the large spines.
Fig. 9 bis.—Same. × 2.
Fig. 10.—Pygidium of *Acidaspis Verneuili.* × 2.
Fig. 11.—Head and pleuræ of *Acidaspis* near *A. Prevosti.* × 2.
Fig. 12.—Pygidium of *Acidaspis* near *A. Prevosti.* × 2.
Fig. 13.—Head of *Acidaspis* near *A. mira.* × 2.
Fig. 14.—Head of *Acidaspis* near *A. mira.* × 2.
Fig. 15.—Pygidium of *Lichas sinuata*, n. sp., drawn twice natural size, from silicified specimens in the Australian Museum. From the limestone near the Wellington Caves.

All the specimens here represented are, unless otherwise stated, from Mr. Mitchell's collection ; No. 14 given by him to the Museum.

PLATE XVI.

Fig. 1.—Example of a crinoid *(Platycrinus)* with the true basals *(b)* as proximal plates ; *r* one of the radials.
Fig. 2.—Examples of a crinoid *(Rhodocrinus)* with five underbasals *(u)* as proximal plates ; *r* one of the radials.
Fig. 3.—Diagram of *Tibrachiocrinus corrugatus*, Ratte ; showing three underbasals (*u*) ; five basals (*b*) ; three radials (*r*) articulated with three brachials (*br*), each of which supports a strong arm ; two radials (r'') with ankylosed brachials, each of which supports two weak or abortive (?) arms ; an azygous plate (*a*) ; an anal plate (*x*), and a ventral tube (*t*).
Fig. 4.—One of the radials with ankylosed brachial supporting probably two arms.
Fig. 5.—*Cycadopteris (?) scolopendrina*, n.sp., from the Wianamatta Shales, natural size, from a specimen given to the Australian Museum by Mr. Harber.
Fig. 6.—Pinnules enlarged twice, showing the border.
Fig. 6 bis.—Section of same.
Fig. 7.—Part of surface enlarged to show regular mode of fracture of the fleshy parenchyma transformed into coal.
Fig. 8.—*Baiera tenuifolia*, Johnston, a coniferous plant from the Jerusalem Coal Basin, Tasmania, natural size, from a specimen in the Australian Museum given by Mr. R. M. Johnston, F.L.S.

PLATE XVII.

Jeanpaulia (?) palmata, n. sp., from the Wianamatta Shales, natural size, from a specimen in the Australian Museum, given by Mr. Harber.

LIST OF WESTERN AUSTRALIAN BIRDS COLLECTED BY MR. CAIRN, AND MR. W. H. BOYER-BOWER, AT DERBY AND ITS VICINITY, WITH REMARKS ON THE SPECIES.

By Dr. E. P. Ramsay, F.R.S.E.

Part I.

Mr. Cairn's Collection.

The Australian Museum has recently become enriched by a fine collection of Birds from Western Australia, obtained at Derby and its vicinity by Mr. Cairn, who, it will be remembed, made some important zoological collections during 1882-3 in New Guinea.

The following is a list of the species which have already come to hand, for, unfortunately, two boxes containing a large portion of the collection are still missing.

1. Astur approximans, *Vig.* & *Horsf.*

Although Gould has given the name of *Astur cruentus* to the western species I have not yet seen any specimens that can be distinguished from the birds known to us from Eastern Australia.

Salvadori (*Orn. Pap. et Molucc. I.* p. 60), places Gould's *A. cruentus* with Cuvier's *Falco (Urospizias) torquatus*, and my *Astur sharpei* and others; but in this I cannot concur.

Gould's *A. cruentus*, may be the same as the Timor bird, but it is certainly not identical with *A. sharpei.* The figures of *A. approximans*, given by Gould, (fol. Vol. I. pl. 17), have been taken from immature birds; when fully adult the bars in the under surface of the body are of a *rich vinous red.* Younger specimens closely resemble *Accipiter torquatus* in plumage (p. 1096).

2. HIERACIDEA ORIENTALIS, *Schleg.*

3. HIERACIDEA BERIGORA, *Vig.* & *Horsf.*

Specimens of these birds, which are both smaller individuals than those from the eastern and southern parts of the continent, seem to prove that they may be one and the same species; one specimen has a pale, almost white, breast, and a remarkably rufous upper surface.

4. NINOX CONNIVENS-OCCIDENTALIS, n. sp.

Two specimens alike in plumage show a larger amount of white on the upper wing coverts, scapulars and hind neck, than in the N.S.Wales or Cape York specimens; the whitish bands on the tail do not reach the shaft of the feathers; all the under surface of the body white, with a distinct well-defined band of rufous brown down the centre of each feather; the outer webs of the primaries near the adjacent tips of the secondaries, have also a faint reddish tint; the face is almost white; length 15 inches, wing 12 inches, tail 6·8 inches, tarsus about 1·4 inch; the feet small, claws comparatively weak. I believe this will prove to be a distinct species, but must be compared with some of its New Guinea allies. For the present I place it as a western variety of *N. connivens*, which may be distinguished as *occidentalis*.

5. DACELO CERVINA, *Gould.*

This and its New Guinea representative *D. intermedia* (Salvad.) cannot be well separated from *D. leachii* (V. and H.)

6. HALCYON SANCTUS, *Vig.* & *Horsf.*

Slightly smaller, and of a clearer blue on the back than our N. S. W. specimens, with a narrow well-defined white collar and nuchal spot. Wing 3·6 inches, bill from nostril 1·5; total length 7 inches from the tip of the bill.

7. HALCYON PYRRHOPYGIA, *Gould.*

Same as the eastern form of this species, both in size and plumage.

8. ALCYONE PULCHRA, *Gould.*

Highly coloured specimens of this beautiful species, throat pure white, all the rest of the under surface of a deep rich coppery rufous ; flanks tinged with violet.

9. ARTAMUS CINEREUS, *Vieill.*

The young have the upper surface of the head and body mottled with ashy brown, the wings grey, rump and under tail-coverts black mottled with ashy white, the upper wing coverts and scapulars margined with ashy brown and the tips of all the quills with a distinct margin of white ; bill brown.

10. ARTAMUS MINOR, *Vieill.*

Similar in every respect to the Queensland specimens. Length 5·2 in., wing 3·9 in., tail 3·5 in.

11. PARDALOTUS UROPYGIALIS, *Gould.*

Several specimens of this well-marked species; the sexes are alike in plumage. The young have the head mottled with brown, and the tips of the spurious wing-feathers of the *same red tint* as in the adult, the upper tail-coverts not so bright, but still brighter in tint than in the adult of *P. melanocephalus*, which this species resembles.

12. PARDALOTUS RUBRICATUS, *Gould.*

Similar in every respect to individuals from Central Queensland. This bird appears to be very plentiful a few miles inland from Derby ; it is very rarely found in N. S. Wales.

13. CRACTICUS ROBUSTUS, *Lath.*

(*C. nigrogularis*, Gould.)

Similar to the N. S. Wales birds of this species.

14. GRAUCALUS MELANOPS, *Lath.*

The only difference, if any, from the eastern birds may be found in its slightly more swollen bill, which, however, may be accidental in the single specimen sent.

15. CAMPEPHAGA HUMERALIS, *Gould.*

One specimen only, immature.

16. PACHYCEPHALA FALCATA, *Gould.*

Many specimens; the young males are slightly more rufescent on the under surface than the females, which they otherwise resemble.

One adult male is slightly larger than the rest, and has a narrow line of white separating the black band on the chest from the rufous breast.

17. COLLYRIOCINCLA BRUNNEA, *Gould.*

Two specimens only, one adult and one immature female with light brown bill, which in the adult is quite black.

We have received specimens which we believe belong to this species, from Port Essington and Port Darwin, both adults and young; it is not improbable that Mr. Sharpe's *C. pallidirostris* may be an immature example of this species.

18. MIMETA AFFINIS, *Gould.*

This I hold to be a good species notwithstanding the remarks of other authors, who have probably not seen an authentic specimen.

19. POMATOSTOMUS RUBECULUS, *Gould.*

Differs from *P. temporalis* in being smaller, and by having the breast of a deeper tint.

20. MYIAGRA CONCINNA, *Gould.*

The feathers on chin and throat are more erect and slightly deeper in tint, than in its ally *M. plumbea.*

21. RHIPIDURA SETOSA, *Q. & Gaim.*

The young birds have the tips of the wing-coverts above, and the secondaries margined with buffy white. The abdomen light buff.

22. MICRŒCA ASSIMILIS, *Gould.*

Two adults and one young. The young have only an indication of the brown on the breast; some of the upper wing-coverts, and spurious wings tipped with white; the tips and outer margins of the secondaries and scapulars, and the ends of the primaries margined with white; the under tail-coverts, abdomen, flanks, and outer two tail-feathers all white.

23. SMICRORNIS FLAVESCENS, *Gould.*

Apparently common, several specimens sent; this I believe is the smallest bird in Australia.

24. MELANODRYAS PICATA, *Gould.*

Two adult males. Mr. James Ramsay obtained this species in the interior of N. S. W., near Cobar, where it is rare.

25. PŒCILODRYAS CERVINIVENTRIS, *Gould.*

This bird appears to be rare; specimens obtained at some distance inland from the coast do not differ in any way from Gould's figure. (Birds of Aust., Suppl., pl. 15.) The measurements, however, are slightly larger than those of the type given by Mr. Sharpe. (Brit. Mus. Cat. Vol. IV., p. 242.)

26. MALURUS CORONATUS, *Gould.*

Several specimens of this beautiful and rare species were obtained inland. I believe these are the first recorded since the types described by Mr. Gould were obtained.

27. MALURUS CRUENTATUS, *Gould.*

I cannot agree with Mr. Sharpe (Brit. Mus. Cat. Bds. Vol. IV. p. 297) that Lewin's *Sylvia dorsalis* is identical with the present species; Lewin's birds came from N. S. Wales, being obtained on the Paterson River, and are undoubtedly the *Malurus melanocephalus*, V. & H., as figured by Gould, fol. Vol. III. pl. 26. The measurements also agree. Gould's *M. cruentatus* is much smaller, and was obtained in N. W. Australia. I hold that *M. Brownii*, V. & H. (Trans. Linn. Soc. XV. p. 223) may be the same as Gould's *M. cruentatus*, but is certainly not Lewin's *Sylvia dorsalis*. The facts are that *Malurus melanocephalus* has the back orange-red, and is found as far south as the Clarence and Richmond Rivers. It is stated to have been obtained on the Upper Hunter and Paterson Rivers, and extends to the Dawson River, Queensland. As we go further north and reach the Burdekin and Herbert Rivers, the birds are of a deeper tint, *almost of a blood-red* on the back; this variety is found inland as far as the Norman River and Port Essington, whence I have obtained specimens; still further west on the northern coast at Port Darwin and Derby the birds become deepest in colour, and of a *clear blood-red* on the back. (See notes on Mr. Boyer-Bower's collection, p. 1,100.)

28. CISTICOLA sp?

Mr. Cairn has sent only one specimen, probably because the species was plentiful, but it appears to me to be distinct from *C. ruficeps*, or else a remarkably well bleached specimen, the under surface being silky and almost *white*, the head alone slightly tinged with buff, the tail light brown with a faintly defined subterminal spot of dark brown, margined on the tips of the feathers with pale buff.

29. PTENÖEDUS RUFESCENS, *Vig. & Horsf.*

One immature specimen, female, similar in every respect to N. S. Wales specimens.

30. ESTRELDA ANNULOSA, *Gould.*

This species is confined, as far as I know, to the north-western portion of the continent; and is still rare in collections even in this country. Wing 1·9 to 2 inches, tail 2 to 2·2 inches.

31. ESTRELDA RUFICAUDA, *Gould.*

Does not extend further south than Central Queensland.

32. ESTRELDA PHAETON, *Homb. & Jacq.*

I have not found this species south of Port Denison.

33. ESTRELDA CASTANOTIS, *Gould.*

Extends its range to South Australia. All three species appear to be plentiful in Western Australia.

34. DONACICOLA PECTORALIS, *Gould.*

Several specimens; I have also received this species and *Poëphila leucotis* from the Gulf of Carpentaria District.

35. POËPHILA ACUTICAUDA, *Gould.*

A fine series of this beautiful species. Mr. Alex. Morton found this species at Port Darwin, and Mr. Gould gives Port Essington as the locality from which the types were obtained. I have not met with it in collections from the Gulf Districts.

36. POËPHILA MIRABILIS, *Homb. & Jacq.*

37. POËPHILA GOULDIAE, *Gould.*

I am not yet quite satisfied that these species are really distinct, but as we have specimens now breeding in our aviaries, I hope the time is not far off when this matter will be settled. It is only fair to say that I have failed to mate adults of the *red-headed* phase with the *black-headed varieties*, but both have been captured from the same troop. I am inclined to belive that the *young males* and the *females* of both these so-called species are alike in colour, both having black on the forehead and face, and light *dull plum coloured* breasts. If they are to be considered as distinct species, this is the only solution of the question, but it must be remembered that we have one variety with *bright golden yellow*, instead of *red* or *black* on the face and forehead. *Poëphila cincta*, Gould, is also breeding readily in confinement in and about Sydney.

38. Emblema picta, *Gould.*

It was quite refreshing to meet with skins of these beautiful birds, the first obtained, I believe, since Mr. Gould described the types. The adult females become with age almost brick-red on the upper surface of the body; the crimson colouring on the face and down the breast and abdomen is not attained, even in the male, until after the second or third year, perhaps later.

39. Stigmatops subocularis, *Gould.*

Those who will take the trouble to compare veritable specimens of *S. ocularis*, Gould, with the present species, will at once see the differences pointed out by Mr. Gould, and the distinction between these two species. Dr. H. Gadow (Cat. Bds. Brit. Mus. IX., p. 214), admits it to be of a distinct race, if not a good species. In its many forms it is found all over Australia, Aru Islands, New Guinea, and the Malay Archipelago.

40. Ptilotis sonora, *Gould.*

This species has a most extensive range being found all through the interior and southern provinces.

41. Ptilotis flavescens, *Gould.*

Apparently plentiful in West Australia; found also in the Gulf districts.

42. Stomiopera unicolor, *Gould.*

This species is not rare at Cape York, and is also found near Normantown in the Gulf of Carpentaria district.

43. Entomophila rufogularis, *Gould.*

I have received this species and also *E. albogularis*, from the Norman River, Port Essington, Port Darwin, and West Australia in general.

44. Philemon sordidus, *Gould.*

The specimens sent by Mr. Cairn agree well with those described by Gould, but with them must be compared the young sent by Mr. Boyer-Bower described hereafter. (See p. 1098.)

45. MELITHREPTUS ALBOGULARIS, *Gould.*

This is evidently the northern and western representative of *M. lunulatus*, but is quite distinct from, and must not be confounded with the next very distinct species, *M. lœtior* (Gould).

46. MELITHREPTUS LÆTIOR, *Gould.*

Dr. Hans Gadow has confused this species with *M. gularis*, Gould., from which it is very distinct, probably because he has had only a single specimen to judge from. A large series now before me plainly shows that the two species are quite distinct from one another, their size and colouring being unvarying. I have received it from the Norman River and other parts of the interior.

47. DICÆUM HIRUNDINACEUM, *Shaw.*

This species is universally dispersed over the whole of Australia; feeds on berries and fruits of various kinds, but seems to prefer those of the *Loranthus*, of which we have in Australia so many varieties if not species, and of a *Viscum (V. aureum)*, which is only found as a parasite on the *Loranthus;* this plainly accounts for the distribution of the *Loranthus* and *Viscum* all over the districts frequented by the *Dicœum*, and in which it is locally known as the Mistletoe Bird. The eggs are *white, without spots or markings of any kind*, sometimes elongated; an average specimen measures 0·65 × 0·45 inch, an elongated one 0·7 × 0·47 inch.

48. CLIMACTERIS MELANURA, *Gould.*

Found all over the Gulf district, also at Port Essington, and apparently distributed over the whole of the north-west coast. Eggs similar to those of *C. scandens*, but slightly smaller. Mr. James Ramsay, obtained specimens about 30 miles west of Cobar. The female differs from the male in having the throat white, the lower portion being tinged and margined with rufous. None of our specimens show white markings on the flanks, as figured by Mr. Gould.

49. SITTELLA LEUCOPTERA, *Gould.*

This is apparently a common species; several specimens of both sexes obtained.

50. CUCULUS INORNATUS, *Vig. & Horsf.*

Apparently plentiful, and extending over the whole of the continent.

51. MESOCALIUS PALLIOLATUS, *Lath.*

(*Chalcites osculans*, Gould.)

This species, though nowhere plentiful, appears to be distributed over the whole of Australia. Specimens from N. S. Wales and South Australia do not appear to differ from those from the N. W. coast.

52. SCYTHROPS NOVÆ-HOLLANDIÆ, *Lath.*

53. CENTROPUS MELANURUS, *Gould.*

Both species apparently plentiful; it is doubtful if *C. melanurus* is specifically distinct from *C. phasianus* of N. S. Wales.

54. CACATUA GYMNOPIS, *Sclater.*

I have received this species from the interior provinces, the Gulf District, and Port Darwin; it ranges therefore over the whole of the interior and the N. W. Coast of Australia.

55. CACATUA ROSEICAPILLA, *Viell.*

The specimens of this species received from the N. W. Coast appear to be stunted, being slightly smaller than those found in N. S. W.

56. CALOPSITTACUS NOVÆ-HOLLANDIÆ, *Gml.*

Found also throughout the Gulf district, as well as in the interior provinces, both north and south.

57. PTISTES COCCINEOPTERUS, *Gould.*

A smaller and more intensely coloured race than those called *Ptistes erythropterus*, of N.S.W. which it otherwise resembles.

58. TRICHOGLOSSUS RUBRITORQUIS, *Vig.* & *Horsf.*

Apparently a very common species, taking the place of *T. Novæ Hollandiæ* of N. S. W. In the young specimens the bill is almost black, the collar round the hind neck narrow, and mottled with light yellow; the breast is also washed with orange instead of red.

59. TRICHOGLOSSUS VERSICOLOR, *Vigors.*

A northern species extending as far south as the Gulf district (Norman River), and found over the whole of the northern and western coasts.

60. LOPHOPHAPS LEUCOGASTER, *Gould.*

It is highly gratifying to meet with a fine series of this rare and well marked species. Sub-Inspector Armit, late of the Native Police, Queensland, obtained specimens in the neighbourhood of Normantown, Gulf District, and forwarded a set of the eggs, which I described as those of *L. ferruginea.* The nest is placed on the ground and, like that of *Geophaps scripta,* consists merely of a few blades of grass lining a slight hollow on the lee side of a tussock or tuft of grass. Eggs 4 in number for a sitting; of a pale cream colour. Length, 1·05 × 0·8 inch.

61. GEOPELIA PLACIDA, *Gould.*

62. STICTOPELIA CUNEATA, *Lath.*

Both apparently common, the former *G. placida,* having a slightly deeper tint of rose on the under surface; the latter *S. cuneata* appears to be more numerously spotted with white dots on the wing-coverts, than in the eastern individuals of this species.

63. HIATICULA NIGRIFRONS, *Cuv.*

Evidently plentiful and universally distributed all over Australia, frequenting margins of fresh-water streams, lakes, dams, &c. Eggs three in number.

64. THRESKIORNIS STRICTIPENNIS, *Gould.*

65. ARDEA NOVÆ-HOLLANDIÆ, *Lath.*

66. TADORNA RADJAH, *Garnot.*

None of these differ from eastern individuals of the same species.

PART II.

MR. T. H. BOYER-BOWER'S COLLECTION.

In addition to the 66 species just enumerated, I have been permitted to examine a fine collection made by T. H. Boyer-Bower, Esq., in the vicinity of Derby. All the specimens were obtained within twenty-five miles of the coast, and although this collection contains a larger number of species than that made by Mr. Cairn, we miss the rare forms apparently characteristic of the interior. This want is somewhat compensated by the additional species which we are enabled to enumerate.

67. CIRCUS ASSIMILIS, *Jard. & Selb.*

(*Circus Jardinii*, Gould, Birds of Aust. fol. Vol. I. pl. 27.)

A very highly coloured individual in full plumage.

68. HALIASTUR SPHENURUS, *Vieill.*

69. MILVUS AFFINIS, *Gould.*

70. FALCO LUNULATUS, *Lath.*

71. TINNUNCULUS CENCHROIDES, *Vig. & Horsf.*

(1. bis) ASTUR APPROXIMANS, *Vig. & Horsf.*

Mr. Boyer-Bower's collection contained a large series of this last-named species in different stages of plumage, none of which, however, can be considered identical with Gould's *Astur cruentus.*

72. STRIX DELICATULUS, *Gould.*

Similar to the N. S. W. individuals of the species.

73. PODARGUS GOULDII, *Masters.*

Like all the members of this genus, this species varies remarkably in the tints and colour exhibited in its plumage; in size it agrees best with *P. phalænoides*, but on reference to Mr. Masters's description it will be seen that the two species are decidedly different. (See P. L. S. N. S. W., Vol. 1, p. 45.)

74. EUROSTOPODUS GUTTATUS, *Vig. & Horsf.*

The specimens here under consideration belong to some of the numerous varieties of *E. guttatus* of Vigors and Horsfield. The predominant colouring of the upper surface, especially on the wings and their coverts is of a rich rufous, the under surface also is highly coloured with the same tint; front and centre of the head richly mottled with rufous and black; under tail-coverts light rufous, the tail below with from 19 to 20 alternate bars of black and rufous, the upper surface of the tail-feathers freckled and barred with ashy grey and rufous, also barred with black, all the feathers being distinctly margined and tipped with rufous. In a second specimen the rufous markings are not so prominent, the large white wing-spot is confined to the first four primaries, inner primaries with a rufous tip.

Length 11½ inches, wing 8·4, tail 6·4.

75. MEROPS ORNATUS, *Lath.*

It would be interesting to ascertain the exact date when they arrive in Western Australia, as in their habits they more nearly approach truly migratory species than any other Australian birds.

76. HALCYON MACLEAYI, *Jard. & Selb.*

Similar to the New South Wales birds.

77. SEISURA NANA, *Gould.*

A smaller species than *S. inquieta*, but having a comparatively larger bill; female slightly tinged with yellow on the chest. Wing, 3·4 inches; tail, 3·3; bill from forehead, 0·8.

78. Gerygone albogularis, *Gould.*

Similar to the New South Wales birds. A specimen said to be the young of this species, has a decided wash of yellow on the head and throat, is slightly different in the markings on the tail, and may prove to be the young of a distinct species.

79. Mirafra horsfieldii, *Gould.*

Slightly deeper in tint than individuals from N. S. Wales.

80. Cincloramphus cruralis, *Gould.*

Mr. Gould speaks of this as a distinct species under the name of *C. cantillans*, but I have never yet met with any specimens which I could specifically separate.

Both varieties are found in N. S. Wales, and in South and West Australia.

81. Ptilotis notata, *Gould.*

A bird plentiful all over Australia north of the Herbert River, very variable in size, and in the extent of the yellow marks on the ear-coverts; the smallest I identify as Mr. Gould's *P. gracilis*, which is found as far south as Cardwell.

82. Philemon sp?

The specimens here referred to may be the young of *P. argenticeps;* they certainly are not the young of *P. citreogularis* which they resemble, but have an ashy grey patch behind the ear-coverts on the side of the neck, and a narrow line of the same tint on the hind neck; on the sides of the neck is a distinct patch of citron yellow, and the cheek is slightly tinged with the same; throat silvery white, with a dark brown or blackish band extending from the ear-coverts, below it a narrow bare line extends from the nostrils over the eye. There is also a narrow triangular bare space behind it; all the feathers of the wings, their coverts, and of the inter-scapular region are margined with ashy white.

83. Entomophila albogularis, *Gould.*

This species extends into the Gulf country and interior provinces of Queensland, where, however, it is rare.

84. MYZOMELA PECTORALIS, *Gould.*

This species is, during some seasons, plentiful in the neighburhood of Cairns and Cardwell, where I found it breeding in 1873-74. Specimens from Cape York and Derby do not differ from those found further south. The young differ materially in plumage from the adults.

85. CHALCITES BASALIS, *Horsf.*

Similar to other members of the species.

(54 bis). CACATUA GYMNOPIS, *Sclater.*

Found also in the Gulf District, where it is tolerably plentiful. It belongs to the sub-genus *Licmetis* rather than to *Cacatua.*

86. CALYPTORHYNCHUS NASO, *Gould.*

Quite the same as others from King George's Sound.

87. PHAPS HISTRIONICA, Gould.

Several specimens in adult plumage of this well-marked species.

88. SYNOICUS AUSTRALIS, *Lath.*

Same as the eastern form of this species.

89. LOBIVANELLUS MILES, *Bodd.*

(*L. personatus,* Gould).

This appears to be a common species in the district, and similar to the Cape York birds. Its range extends as far south on the east coast as Cooktown, its southern representative being found as far as the Herbert River " Valley of Lagoons."

90. ERYTHROGONYS CINCTUS, *Gould.*

An inland species, but evidently dispersed over the whole of Australia; it is plentiful in the southern provinces of the interior

91. RECURVIROSTRA RUBRICOLLIS, *Temm.*

92. HIMANTOPUS LEUCOCEPHALUS, *Gould.*

These species are found over the whole of Australia, both on the coast line and in the interior, and are most plentiful on the inland lakes of the southern districts.

93. PLATALEA REGIA, *Gould.*

94. ARDEA PACIFICA, *Lath.*

95. DENDROCYGNA VAGANS, *Eyton.*

Evidently dispersed over the whole of Australia.

96. STERNA ANGLICA, *Mont.*

(*Gelochelidon macrotarsa*, Gould).

This species is nowhere plentiful in Australia, except during the breeding season in the interior of N. S. Wales.

97. STERNA FRONTALIS, *Gray.*

(*Sterna melanorhyncha*, Gould).

Found all over the coast line of Australia.

This brings the species known from the Derby district, including a radius of about 100 miles inland, up to 97 species.

On the arrival of further collections daily expected, I hope to be able to add a more complete list of the birds from these districts in a future paper, with more particulars as to the exact localities from which they were obtained.

MALURUS CRUENTATUS BOWERI.

(?) Malurus cruentatus, juv. Gould.

Among an interesting series of red-backed wrens I find the skin of a young individual which has a few crimson feathers on the shoulder, back, and rump; the remainder and upper tail-coverts and flanks are light fawn colour; wings and tail-feathers brown margined with fawn; throat and abdomen white, the sides and adjacent flank feathers and thighs tinged with cinnabar-red, under tail-coverts light fawn colour; bill brown; an ashy spot in front of the eye; two or three of the outer tail-feathers tipped with light fawn colour or light brown. This may, hereafter, be proved to belong to a distinct species, and, if so, should bear the name of its discoverer, Mr. Boyer-Bower, *Malurus cruentatus Boweri.*

NOTES FROM THE AUSTRALIAN MUSEUM.

DESCRIPTION OF A NEW AUSTRALIAN FISH.

By E. Pierson Ramsay, F.R.S.E. and J. Douglas-Ogilby,

Assistant in Zoology, Australian Museum.

Apogon roseigaster, sp. nov.

B. vii. : D. 6 1/10 : A. 2/9-10 : V. 1/5 : P. 12-13 : C. 17.

Length of head $3\frac{1}{5}$, of caudal fin $4\frac{3}{4}$, height of body $3\frac{1}{2}$ in the total length. *Eye*—diameter $3\frac{2}{5}$ in length of head, $\frac{3}{4}$ of a diameter from the end of snout, and $\frac{4}{5}$ apart. Interorbital space slightly convex : upper profile of head nearly flat with a conspicuous median longitudinal ridge : maxilla reaches to beneath last fourth of orbit. Inner edge of preopercle crenulated on both limbs, and with a few small serrations at the angle : outer edge of preopercle, and preorbital, entire. *Teeth*—villiform on jaws and vomer. *Fins*—dorsal spines weak, the third the highest, about $\frac{3}{8}$ of the length of the head ; soft dorsal much higher. Anal commences behind the origin of the soft dorsal, and like it is provided with a scaly sheath at the base. The ventral fins are half the length of the head and much shorter than the pectorals. Caudal slightly rounded. *Scales*—very deciduous. *Airbladder*—large, truncate in front, each angle bearing a short lobe. Peritoneum, and a lobe on either side of tongue, black. *Colors*—pale yellowish, with the lower parts roseate, this colour divided posteriorly into two gradually decreasing lobes by the anal fin, but not extending to the caudal ; upper half of spinous dorsal black : soft dorsal and anal pale red with a longitudinal black band about half way up ; other fins immaculate.

These little fishes appear to be plentiful in the Parramatta River, numbers being obtainable any morning in the fish market among prawns from that locality, along with the recently-recorded *Ambassis gymnocephalus*. Out of numerous specimens examined during the last two months the largest measured but 2·85 inches, and none were under 2 inches. All the examples examined during the latter half of October and the earlier half of November were spawning, the milt or ova running freely from them on the slightest pressure. The scales of this species must be very deciduous, since notwithstanding the numbers which we have handled, we have failed so far to detect a single scale on any specimen; and it is also noteworthy that the palatine bones are unfurnished with teeth, contrary to the rule holding good for other members of the genus.

FLOWERING SEASONS OF AUSTRALIAN PLANTS.

No. II.

By E. Haviland, F.L.S.

PLANTS FLOWERING IN THE NEIGHBOURHOOD OF SYDNEY DURING THE MONTH OF AUGUST, IN ADDITION TO THOSE ENUMERATED IN THE LIST FOR JULY, NEARLY ALL OF WHICH ARE STILL IN FLOWER.

As it is impossible for the author to visit more than a few localities during each month, these lists must necessarily, for the present, be very imperfect. Supplementary lists will, however, be added as each month recurs, until, it is hoped, the flowering seasons of at least the Cumberland plants have been ascertained. When sufficient data have been collected, a tabulated statement will be published, giving against each species its complete flowering season.

Ranunculaceæ—
  Clematis aristata.
Dilleniaceæ—
  Hibbertia volubilis
  ,, *dentata.*
Polygaleæ—
  Comesperma ericinum.
Tremandreæ—
  Tetratheca pilosa.
Rutaceæ—
  Phebalium denticulatum.
Euphorbiaceæ—
  Amperea spartioides
  Poranthera microphylla.

Leguminosæ—
  Gompholobium Huegelii
  Pultenæa echinulata
  Acacia elongata
  Bossiæa ensata
  Indigofera australis
  Oxylobium trilobatum.

Crassulaceæ—
  Tillea purpurata.

Myrtaceæ—
  Callistemon rigidus
  ,, *linearis*
  Melaleuca ericifolia.

Umbelliferæ—
Trachymene incisa
Proteaceæ—
Hakea acicularis
Conospermum longifolium var. *angustifolium.*
Compositæ—
Gnaphalium Japonicum
Epaltes australis
Senecio australis.
Campanulaceæ—
Lobelia gracilis
,, *anceps*
,, *dentata*
Wahlenbergia gracilis.
Goodeniaceæ—
Dampiera Brownii.
Myrsinaceæ—
Myrsine variabilis.
Scrophularineæ—
Euphrasia speciosa.
Bignoniaceæ—
Tecoma australis.

Epacrideæ—
Epacris pulchella
,, *purpurascens*
Brachyloma daphnoides
Leucopogon amplexicaulis
,, *esquamatus*
,, *lanceolatus*
,, *biflorus.*
Orchideæ—
Diuris sulphurea
Dendrobium speciosum
,, *linguiforme*
Caladenia cœrulea
,, *carnea*
Cyrtostylis reniformis
Lyperanthus suaveolens
,, *nigricans*
Pterostylis pedunculata
,, *concinna*
,, *curta*
,, *reflexa.*
Liliaceæ—
Stypandra umbellata
,, *glauca.*

SOME HITHERTO UNDESCRIBED PLANTS OF NEW SOUTH WALES.

RECORDED BY BARON VON MUELLER, K.C.M.G., M.D., PH.D., F.R.S.

GREVILLEA RENWICKIANA, n. sp.

Quite procumbent; branches elongated; branchlets nearly glabrous leaves in outline almost lanceolar, generally pinnatifid, slightly recurved at the margin, glabrous above, subtle appressed-hairy beneath, the base cuneately decurrent on the leafstalk, the lobes from semilanceolar to nearly deltoid and pungent-pointed; flowers 2-6 together on the conspicuous stalk, much longer than their stalklets; petals from pale-greenish turning to slate-colour, much recurved in their upper part, outside scantily appressed-hairy, inside glabrous; hypogynous gland almost semicircular, depressed, not protruding; style long-exserted, of rosy coloration, except near the base glabrous; stigma at the summit lateral, roundish-oval; ovary on a short stipes, white-silky.

On heath-ground near the Little River in the Braidwood District, at an elevation of about 3,000 feet (W. Bäuerlen).

Branches lengthening to four feet. Well-developed leaves 2-4 inches long. General flower-stalks $\frac{1}{2}$-1 inch long, with the stalklets towards the summit, the latter about $\frac{1}{6}$ inch in length, scantily hairy. Bracts minute, semilanceolar-deltoid, early deciduous. Rudimentary calyx truncate, only slightly descending, (hardly less developed than in *Vitis* and some species of *Rhododendron*). Petals through their back-curvature not much above half-an-inch long. Style hardly exceeding an inch in length. Fruit not yet obtained.

In its completely prostrate growth this very local species is similar, among East Australian congeners, to *G. laurifolia* and *G. repens,* differing from both, however, in the larger and much less numerous flowers. The same characteristics remove it from *G. asplenifolia,* which has similar leaves, but is of erect stature.

The majority of the flowers on the transmitted specimens, as well as numerous others sent subsequently at my desire by Mr. Bäuerlen, are bipistillate, two ovaries developing on distinct stipites, each with its own style and stigma, or occasionally two of the pistils still from the same flower are connate into one ; rarely even a third pistil is developed. This tendency to floral duplication also extends partly to the petals, which sometimes become augmented in number also, while the often scattered stalklets may appear solitary through the concrescence of two. Analogous teratological states of flowers seem not to have been noted before in the vast order of *Proteaceæ.*

G. Goodii and *G. cirsiifolia* share the same depressed or creeping mode of growth ; the former produces racemes sometimes 5 inches long ; the latter species has recently been shown by Mr. W. Webb to occur on Mount Lindsay.

This remarkable plant has been dedicated to the Hon. Dr. Renwick, who in his legislative, professional, and social position, has much promoted scientific research in this colony ; who, as Executive Commissioner for N.S.W. at the Melbourne International Exhibition, advanced much the industrial and rural interests of the elder of these colonies ; who initiated there a systematic department for forest-culture; and who, in his present ministerial position, also gave for technologic purposes some support to the travels of the discoverer of this new *Grevillea.*

MELALEUCA DEANEI, n. sp.

Branchlets glabrous ; leaves scattered, almost lanceolar, thick, nearly flat, three-nerved, glabrous ; spikes rather short ; calyces imperfectly velvet-downy, their lobes semi-ovate, about half as long as the petals, deciduous ; connate portions of the stamens shorter than the calyx-lobes ; filaments in each bundle 15-20 ; anthers pale, almost oval; stigma slightly dilated; fruits rather large, smooth, nearly hemi-ellipsoid, with broadish base sessile, without denticulations at the orifice; valves deeply enclosed.

On the northern side of the Lane Cove River, occupying sandy ground on the ridges (H. Deane, Esq.).

This plant is closely allied to *M. parviflora*, which species, though frequent along the whole southern and also extratropic western coast-country, does not seem to follow the eastern shores of our continent, unless the present plant should prove an outpost of the large individual masses of the species, and should have become somewhat changed by altered climatic influences. The leaves are larger, straighter and less acute, with a more evident lateral nervature, resembling rather those of *Leptospermum lævigatum*; the spikes so far as seen are shorter, the fruits are considerably larger, and do not retain the calyx-lobes. Mr. Betche seems to have found the identical plant on the Richmond River; but I have not seen any fruiting specimens from there.

While alluding to a new plant of this genus, the following localities of other rare species may now be recorded: *M. hypericifolia*, Broger's Creek, up to 1,800 feet, there attaining a height of 15 feet (Bäuerlen); *M. elliptica* and *M. adnata*, near Mount Rugged (Miss S. Brooke); *M. thymifolia*, Cudgegong (Dr. Barnard), Upper Clarence River (Miss Brendodi); *M. eriantha*, near Beverley (Miss Smith); *M. foliolosa*, Endeavour River (W. Persieh); Mitchell and Flinders Rivers (Edw. Palmer); height of the last-named species to 20 feet, its bark lamellar.

BOSSIAEA STEPHENSONII, n. sp.

Erect, almost totally glabrous; branchlets rather slender, conspicuously compressed; stipules comparatively large, from a roundish-broad base nearly lanceolar, of almost foliaceous texture; leaves elliptic-lanceolar, pointed, slightly rough, hardly paler beneath, gently recurved at the margin; stalklets twice or thrice as long as the small calyx; its bracteoles basal; upper half of the calyx not much shorter than the lower, its lobes almost deltoid; lobes of the lower half semi-lanceolar; fruit somewhat elliptical, but truncated into an almost quadrangular form, its stalk-like base not much longer than the calyx; seeds generally 5-6.

Near Wollongong (L. Stephenson, B.A.).

Innovations somewhat hairy. Branchlets about ⅛ inch broad. Leaves alternate, chartaceous in texture, almost distichous, hardly spreading, ½-⅔ inch long, equilateral, on short stalks, blunt at the base; veins particularly visible underneath; stipules green, attaining a length of nearly ¼ inch. Stalklets very thin, about as long as the leaves. Bracteoles none on the upper part of the stalklet unless very fugacious. Calyx scarcely exceeding ⅙ inch in length; its lower lobes proportionately large. Petals not seen. Filaments nearly as long as the connate portion of the stamens. Fruit bent downward, scarcely one inch long, and ⅓ inch broad, almost flat, prominently margined, but not obtained in a fully matured state.

Recognised by the erudite finder as a distinct species; nearest to *B. heterophylla* (as a form of which it may cursorily have been hitherto passed over), but easily distinguished by uniformly broader not incurved leaves, longer and thinner stalklets without any bracteoles towards the middle, smaller calyces, blunter and less stipitated fruit; approaches in some respects the West Australian *B. linophylla*, but the leaves are constantly broader, the stalklets of the flowers longer, the calyces more deeply lobed, while the stipes of the fruit is shorter; moreover from both, and indeed most congeners, Mr. Stephenson's plant is separated by the large but slowly brownishing stipules.

Incidentally it may be here observed that *B. cordigera* has been found by Mr. Wooster, at Bolwarra; *B. foliosa* by Mr. Bäuerlen, on the Genoa; *B. buxifolia* by Dr. Lauterer, on the Turon; *B. microphylla* by Mr. Stirling, on the Dargo; *B. Armitii* by Mr. Armit, on the Etheridge and Percy Rivers; further it may be noted, that on the mountains near Braidwood, *B. Kiamensis* was found to ascend to 3,800 feet (W. Bäuerlen), the height of the plant ranging from ½ to 10 feet; its fruit is much compressed, rhomboid-ovate, and about half an inch long. Meisner already recorded 8-12 ovules as those of *B. eriocarpa.*

PULTENAEA BAEUERLENII, n. sp..

Erect, dwarf; stipules elongated, somewhat downy; leaves crowded, filiform, channelled, slightly pointed, granular-rough outside; flower-heads terminal; bracteoles about as long as the calyx, lanceolar, slightly downy at the margin; calyx partially glabrous, its lobes subulate-semilanceolar; petals all yellow, the upper one somewhat longer than the others; anthers black; style nearly glabrous; ovary silky.

On the summit of Mount Currockbilly, accompanied by *Dracophyllum secundum*, *Blandfordia nobilis*, *Bossiaea Kiamensis*, *Boronia pilosa* and *B. rhomboidea*, at an elevation of 4,000 feet (W. Bäuerlen). Allied to *P. aristata*, but the stipules broader and less pointed, the leaves never distinctly mucronate, the bracteoles not terminating in a distinct bristle, the calyx-lobes much less narrowed upwards and not long-ciliated, the anthers dark, and probably the fruit also will show marks of distinction; from *P. rosea* it differs in not having silky bracteoles and calyces, in more pointed lobes of the latter, in colour of petals, in less hairy style, and again perhaps in fruit.

Pultenaea altissima occurs also on the mountains near Braidwood, up to 3,000 feet (Bäuerlen).

The opportunity is an apt one for recording also those plants, which from Mr. W. Bäuerlen's recent collections, can now additionally be indicated as occurring very far south in New South Wales.

Mollinedia Huegelii; Shoalhaven
Cocculus Moorei; Shoalhaven.
Euodia micrococca; Shoalhaven.
Phyllanthus Ferdinandi; Shoalhaven.
Monotaxis linifolia; Braidwood.
Cryptandra Scortechinii; Braidwood.
Cryptandra ericifolia; Broger's Creek.
Mirbelia pungens; Braidwood.
Pultenæa pycnocephala; Mt. Currockbilly.
Daviesia squarrosa; Clyde.
Daviesia acicularis; Shoalhaven.

Jacksonia scoparia ; Shoalhaven (Th. Weir).
Acacia pubescens ; Shoalhaven.
Albizzia pruinosa ; Shoalhaven.
Abrophyllum ornans ; Shoalhaven.
Olax stricta ; Braidwood.
Panax cephalobotrys ; Broger's Creek.
Villaresia Moorei ; Bulli (Kirton).
Symphyonema paludosum ; Broger's Creek.
Stenocarpus salignus ; Shoalhaven.
Banksia latifolia ; Bulli (Kirton).
Candollea linearis ; Broger's Creek.
Mitrasacme polymorpha ; Broger's Creek.
Ruellia australis ; Shoalhaven.
Styphelia esquamata ; Braidwood.
Epacris crassifolia ; Broger's Creek.
Epacris Calvertiana ; Braidwood.
Woollsia pungens ; Braidwood.
Prasophyllum striatum ; Broger's Creek.
Lyperanthus ellipticus ; Broger's Creek.
Colocasia macrorrhiza ; Ulladulla (35° 18′ S.)
Schoenus ericetorum ; Braidwood.
Psilotum triquetrum ; Broger's Creek.

DESCRIPTION OF A NEW SPECIES OF *HOPLOCEPHALUS.*

BY WILLIAM MACLEAY, F.L.S., &c.

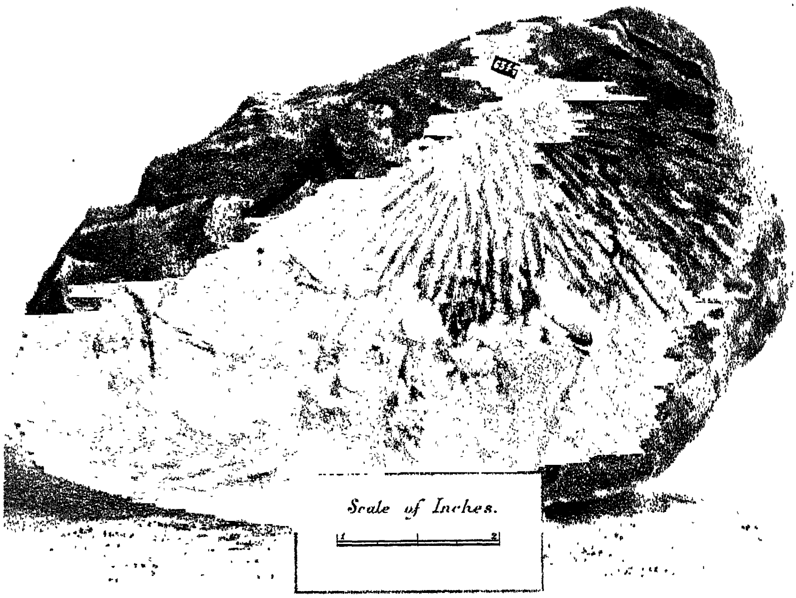
HOPLOCEPHALUS COLLARIS, n. sp.

Scales in 15 rows.
Abdominal Plates 147.
Anal Plate entire.
Sub-caudal Plates 46.
Total length 15 inches.
Length of head to the collar, ½ inch.
Length of tail, 3 inches.

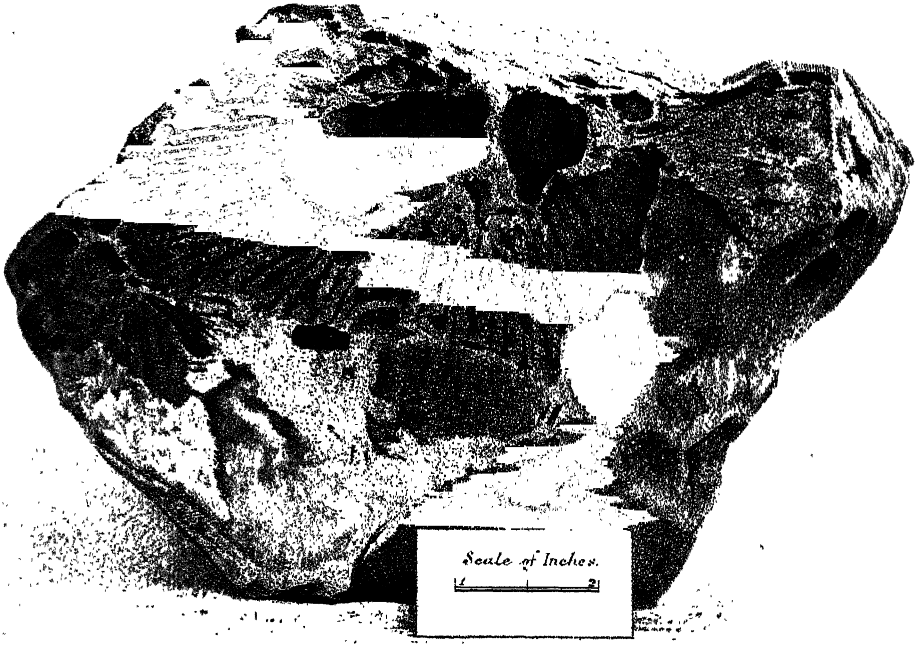
The general colour of the body is dark brown, becoming of a lead-colour towards, and on the sides of, the abdominal plates, and clouded yellowish-white on their middle. The head is broader than the neck, flat, and marked above with a large black patch, which extends, in front to between the eyes, behind for two or three scales behind the occipital shields, and on either side to about a line with the upper margin of the eye ; behind the black patch is a white collar extending over about three scales. The front, sides and under surface of the head are white, speckled with black or dark brown, with a line of larger spots along the upper labial shields, and a narrow black bar from the eye to the nasal aperture.

The snout is rounded, the anterior frontal shields are not more than half the size of the posterior, which are pentagonal, the vertical is elongate and parallel-sided, the apex narrowly and acutely pointed in the middle, the base triangular between the occipitals, the superciliaries are about the width of the vertical but shorter. There are two posterior ocular shields and one anterior, which last with the nasal shield occupies the place of the loreal. The nasal shield is elongate, with the nostril in the middle, the third and fourth upper labial shields together bound the entire lower margin of the eye and one half of the anterior margin. The eye is of moderate size, the pupil round. The body is round, thin at the neck, gradually thickening to the middle, and becoming very fine at the tail, which terminates in an acute point.

I have never seen but the one specimen of this snake, which was captured a few weeks ago near Bega by Mr. Charles Anderson, and sent by him to Mr. Masters the Curator of the Macleay-Museum. It is quite distinct from all the other described species of *Hoplocephalus*, a genus now numbering 24 well-marked species.



I.



II.

I. Mastodonsaurus robustus, Qu. Stuttgardt.
II. The Fossil from Biloëla, Port Jackson.

Gibbs, Shallard & Co, Lith Sydney.

ON THE BILOELA LABYRINTHODONT

(SECOND NOTICE.)

BY PROFESSOR W. J. STEPHENS, M.A., F.G.S.

(PLATE XIV.)

In the former paper some general statements were made as to the date of the Hawkesbury rocks, and the atmospheric or climatic conditions under which they were deposited; and it is possible that the subject may not require reiteration of similar arguments. Nevertheless, as a preliminary to a more extended examination into the evidence for the identification of their homotaxis with Indian, S. African, Northern Asiatic, European and American rocks, which has been worked up by, among others, the geologists of the Indian Survey, it may be well to recapitulate what we know ourselves of the sequence in N. S. Wales. And I should venture to say that it is out of the question here to argue as to the position of the Upper Marine Beds. I shall assume them to be, as generally admitted, Carboniferous, containing as they do fossils of the following genera:—*Zaphrentis*, *Palæaster*, *Productus*, *Spirifer* (7 sp.), *Pterinea*, *Aphanaia*, *Aviculopecten*, *Conularia*, *Euomphalus*, *Murchisonia*, *Orthoceras*.

But the Newcastle coal series, in which no evidence is afforded by marine fossils, the beds being entirely of land or fresh-water origin, can hardly be said to have had its homotaxial position ascertained with an equal degree of certainty. Driven to the fossilised plants of this formation for such probable testimony as they may yield, in the absence of the less ambiguous marine fauna, we observe:—First: That *Lepidodendron* and other unmistakably carboniferous types are absent. Secondly—That in the plant beds which underlie the strata containing the abovementioned marine carboniferous fauna, and which, therefore, may claim palæozoic age, we have *Glossopteris Browniana,* which reappears in the Newcastle beds, but no higher; and *G. primæva, G. Clarkei,* and *G. elegans,* which do not survive, but are replaced by *G. linearis, G. ampla, G. reticulum, G. cordata, G. tæniopteroides, G. Wilkinsonii,* and *G. parallela.* The lower beds also contain *Nœggerathiopsis prisca,* and *Annularia australis*; the upper *N. spathulata* and *N. media.* Of these *Annularia, Phyllotheca,* and *Vertebraria,* appear also in the Newcastle upper coal (or Permian) beds, with many other species, including Conifers. A ganoid fish, *Urosthenes,* is associated with them in the same beds. The natural conclusion then will be that this Upper Coal is really of Permian age, at least in the homotaxial sense.

This conclusion is corroborated by an examination of the overlying Hawkesbury beds, whose Triassic character has been frequently pointed out by the Indian geologists, and seems to have been finally acquiesced in by the late Rev. W. B. Clarke, who had previously regarded them with the Wianamatta above, and the Newcastle Beds below, as really Upper Carboniferous. (Southern Gold Fields, p. 246 sqq.). With reference to this point we observe—First, that the Newcastle Beds belonging to the (Permian? or) Upper Coal measures, had undergone considerable denudation before the commencement of the deposition of the Hawkesbury Sandstone, as Mr. Wilkinson has shown from a section upon the falls of the Shoalhaven, and as I have myself observed at Lake Macquarie, so that an interval of some length is here indicated, though its duration cannot at present be more than guessed at. Yet after a careful consideration of the very scanty information which is supplied us by the rare and imperfectly preserved fossils of the Hawkesbury formation, most geologists will probably agree with Mr. Wilkinson in arranging it, homotaxially at least, with the Triassic of other regions. For the characteristic plants of the Newcastle Coal Measures have disappeared. We find no more *Glossopteris* nor *Vertebraria.* But we find in their place a large and robust fern, if fern it be, *Thinnfeldia odontopteroides,* which is common to both Hawkesbury and Wianamatta, *Ottelia præterita*, a large water plant with fenestrated leaves from the Parramatta River, Unionidæ, a huge *Planorbis* (?) &c., &c, which seem to indicate a much later period, together with *Palæoniscus* and *Cleithrolepis* in the Wianamatta, or uppermost beds of the series. (Note 2). The presence of *Macrotæniopteris* is certainly in favour of the Jurassic age of the Wianamatta, but that of *Palæoniscus* would seem to out-weigh it in favour of the Triassic.

The evidence, however, taken all together, formed a strong ground for this hypothetical arrangement, which is now almost established by the discovery, in the middle of the formation, of the Labyrinthodont fossil figured in Plate XIV.

It is plain, from what has been stated, that if the Newcastle beds are Permian, the Hawkesbury are probably Triassic. But we cannot check this conclusion by an examination of the overlying beds. For at least on this side of the main range, neither the supposed Permian, nor the supposed Triassic, *i.e.*, neither the upper coal measures nor the Hawkesbury and Wianamatta have ever been subject to submergence or marine erosion, except exactly along the line which from time to time has formed the eastern coast of the continent. But they have undergone enormous sub-aerial denudation, the records of which may—to some extent—be read in the gorges of the Blue Mountains. It may be that the Clarence River beds are Jurassic, yet since they are entirely of fresh-water origin, it is difficult, with our present scanty knowledge, to correlate them with certainty. The cretaceous formation north of the Darling is the first, after the upper marine (Upper Carboniferous) beds, to offer the much desired evidence which a marine fauna alone can supply.

In Mr. Miall's report upon the Labyrinthodonts, (British Association, 1873), we have genera recorded from the Trias in the northern hemisphere as follows:—Europe, *Capitosaurus*, *Chaliosaurus*, *Diadetognathus*, *Labyrinthodon*, *Mastodonsaurus*, *Melosaurus*, *Metopias*, *Trematosaurus*, *Xestorrhytias*; Central India—*Brachyops*, *Gonioglyptus*, *Pachygonia*; South Africa—*Micropholis;* Australia—*Bothriceps*. The Triassic forms in the New World all belong to the northern hemisphere, and are *Dictyocephalus*, *Eupelor*, *Pariostegus*. To these forms Mr. Lydekker (Palæontologia Indica, Ser. IV. Vol. I. Part 4), has added *Gondwanosaurus*, the Labyrinthodont from the "Bijori Group," which forms the top of the Damuda, and immediately underlies the Panchets which contain their *Dicynodon*, *Gonioglyptus*, *Pachygonia*, *&c.*, and are probably more or less contemporary with the Mángli group which has yielded *Brachyops laticeps*, (lib. cit. p. 2). Again, in Part 5 of the same volume the same author describes certain *Mastodonsaurus* and *Pachygonia* remains from the Maleri and Denwa Groups, and gives a table of homotaxial affinities, from which I extract the following table :—

Commencing with the Upper Trias (Rhætic and Keuper of Europe) ; Maleri, (Upper Gondwana) of India, and here indicated by the Roman numeral I. we have

I. EUROPE.	I. INDIA.
Belodon.	*Belodon.*
Hyperodapedon	*Hyperodapedon.*
Mastodonsaurus.	*Mastodonsaurus.*
Ceratodus	*Ceratodus.*

Lower down we arrive at the Bunter and Muschelkalk of Europe, the Panchets of India, where we find.

II. EUROPE.	II. INDIA.
Trematosaurus.	*Dicynodon.*
	Pachygonia.
	Gonioglyptus.

It is hardly necessary to observe that *Dicynodon* is a characteristic fossil of the Karoo beds in South Africa ; and, for my own part, I believe that the appearance of this strange and obsolete type was contemporaneous, in India and Africa, within the not excessive limits of one hundred centuries, or ten thousand years, which many and various considerations seem to indicate as the unit of geological time ; (Croll, 'Climate and Time,' *passim*), and that in like manner the *Mastodonsaurus*, *Capitosaurus*, or whatever it may prove to be, certifies the contemporaneity under such wide conditions as have been indicated above, of the rocks seen at Biloela

(Cockatoo Island) and elsewhere on the Eastern Coast of Australia, and known everywhere by the late W. B. Clarke's name of "The Hawkesbury Formation."

Now in this formation, as was stated in the previous note upon the Biloela fossil, there are abundant evidences of the action of drift ice. At the present moment I am not aware of any direct evidence of glacier action. Still the existence of glaciers in the mountainous regions from which the drift is derived must be postulated if we find in the fluviatile deposits unmistakable tokens of glacial action. Since these have been ascertained, we need not argue the question of the possibility of glaciers. But we must at the same time admit that there is no evidence for a *Glacial period* upon the present line of coast of New South Wales. Moreover, it may be boldly asserted that all that we know of the formation of glaciers will lead us to locate them upon the western rather than on the eastern shores of lands, whose climatic or meteorological conditions might otherwise render their formation possible.

However, the evidence as to *Drift ice*, carried down by great rivers in ancient times as now in the present day by the Rhine, the St. Lawrence, and scores of other streams, seems conclusive. In short we may positively say that the Hawkesbury sandstones were deposited during a period in which there were upland glaciers, and tremendous spring and summer floods. There are many regions similarly affected now, and there have been many more, as any student of geology knows.

But at the same time we have to recognize the existence of a warm temperate climate, in which the luxuriant Fern vegetation, Ganoid Fish, Unionidæ, and last, though the most important, large Labyrinthdont Amphibians could exist.

The same phenomena are presented by Triassic strata all over the world, and lead us to the conclusion that the period during which this formation, with all its singular and transitional fauna and flora, was developed, was one during which the earth's orbit was in one of its stages of extreme eccentricity, and the globe itself subjected to extraordinary changes of climate, reciprocating in the alternate hemispheres in such a manner that equable warmth in the Northern or Southern was contemporary with the most extreme inclemency in the opposite.

The particular horizon in which the characteristic fossils may be looked for is, as is shown by the Biloela remains, nearly at sea-level along the coast. It is at the same level that the action of river ice has been detected by Mr. Wilkinson. (Report, &c., 1882, p. 53.) That quantities of fern fragments, with their tissues still woody and elastic, are everywhere to be met with in the intercalated shales; that *Ottelia præterita*, was found on the shores of the Parramatta River; and that thick beds of ferruginous concretionary sandstone, as seen at all levels, from that of the sea to the heights of Waverley, Randwick, and North Head, are worked for road metal, or gravel, is all evidence to the same effect.

Now if we follow this horizon to the westward, we observe the strata dipping towards the Nepean fault, at a small angle, indeed, but unmistakably. From the first slope of the ascent of the Blue Mountains, where the still incoherent sands have been bent downwards towards the East, without other disturbance than that caused by the necessary sliding of bed over bed, and certainly before their consolidation into what is ordinarily known as rock, we find a continual rise to the westward; reaching at last its culmination in the unabraded summit levels of sandstone which have been protected from erosion by the basalt of Mount Tomah, Mount Wilson, Mount King George, and Mount Hay. At Mount Piddington, near Mount Victoria, we find *Thinnfeldia*, and likewise evidences of ice, in abundance. There too, and more particularly at Katoomba, we find the ferruginous quartz conglomerate, which is repeated in identical form in Clark Island in Port Jackson, and elsewhere on the coast.

This I take to be the horizon of the fossiliferous beds of Biloela, and it is along this plane that I should expect that more important discoveries will yet be made.

Nothing however can now upset the identification of our Hawkesbury (and probably Wianamatta) beds with the Trias of Europe and India.

I cannot refrain in conclusion from again expressing my conviction that Homotaxial relations do often imply contemporaneity—not always certainly, nor we may say, *ever* in recent periods, but the more frequently the further we go back into the remoter antiquity. And I must add that I do not think that an interval of 10,000 years between one formation and another should be considered as a break in that loose co-ordination of dates which we call Geological Time.

I may here observe, in conclusion, that the former paper upon this subject was written away from Sydney, and without the proper books, but from notes which turn out to have been in some parts imperfectly made. For instance, p. 934, in adopting Quenstedt's reference of *Capitosaurus*, Münster, back to *Mastodonsaurus*, Jäger, I was flying directly in the teeth of the Report of 1874, which I had nevertheless read, and ought to have better digested. For here (p. 154) *C. robustus*, van Meyer, is described, with the caution that the shields in Quenstedt's plate cannot as yet be accurately determined. They are however, mentioned (ibid.) as follows:—"Median plate rhomboidal with rounded entering angles; lateral plate not produced backwards, with strong reflected process; radiately sculptured."

The formations which in New Zealand correspond to the Newcastle (Permian) and Hawkesbury (Triassic) of New South Wales, are the Kaihiku for the former, and the Oreti, Wairoa and Otapiri series for the latter (Hector, N.Z. Handbook, 1870, p. 24). They are of enormous thickness, from 12,000 to 15,000 feet if taken together, and are principally marine, though Plant-beds containing *Glossopteris*, &c., occur both at the base of the Kaihiku and at various horizons in the later formations. Rough and heavy conglomerates and breccias repeat the characters observed in the Permian and Trias in India (ib. l.c.) and elsewhere; and the most striking variation from them is found in the great thickness of the New Zealand beds. It is obvious that they also differ from their homotaxial equivalents in Australia by their largely marine origin. This opens a way to interesting speculations on the geological history of both countries, which, however, must be passed for the present. I mention the subject here only to note that in New Zealand also, as well as in New South Wales, Labyrinthodont remains have been found, as in the Kaihiku, at Nugget Point, Otago, and in the Otapiri, in the Wairoa district; and that the great *Eosaurus* (?) of Mount Potts, so bulky that in some vertebræ the centrum is 18 inches in diameter, is also referred, though with some hesitation, to the same order (Hector l.c.).

Note 1.—After the preceding paper had been read, on November 30, I received a note from Mr. Wilkinson informing me of the discovery of a 'Baby Labyrinthodont' in the railway excavations, near Gosford. Two other Labyrinthodont fossils have also turned up from the Wianamatta at Bowral. The first however is from one of the intercalated shales of the upper portion of the Hawkesbury sandstones, and not in the higher Wianamatta beds.

These help to mark the horizon, upon which such remains may be sought for with good hope of success, as that of the upper and irregularly bedded portion of the Hawkesbury, and the lower beds of the Wianamatta formation; contemporary, it may be, with an early stage of the basaltic eruptions which have formed the rich lands of the Upper Nepean and Wingeecarribee, and have also intersected with a net work of dykes and small cones of volcanic rock the whole valley of the Nepean from Razorback to Pennant Hills. The shales are certainly younger than some of the igneous rocks of the district, and older than others, as is shown from the instance of Prospect Hill by the late Wm. Clarke (Sedimentary Formations, p. 73), so that the whole region must have been subject to volcanic outbursts and disturbances during long geological periods (though interrupted probably by intervals of repose), commencing with the close of the Permian, and ultimately dying out in the early Tertiary.

Note 2.—In the piece of rock alluded to in Note 1, *Palæoniscus*, *Cleithrolepis*, and another Ganoid, are associated with the Labyrinthodont. This discovery therefore helps to bind the Wianamatta and Hawkesbury in a still closer sequence than was before generally recognised. But see Rev. T. Woods, P.L.S. N.S.W , Vol. VIII.

Note 3.—Since the preceding paper has been in type, the fossil has been cleared from the matrix in such a manner as to show that it is really a cast or impression of the exterior aspect, and that the interior surface was quite smooth. It follows that its position was upon the left side.

EXPLANATION OF PLATE XIV.

The upper figure represents a specimen from a collection of fossils supplied to the University some years ago, by Dr. Krantz, of Bonn, and bears the label "*Mastodonsaurus robustus*, Qu.; Keuper sandstein, Gres triassique supérieure, Upper Triassic Sandstone. Loc. Stuttgart." I presume it to be the lateral thoracic plate of the left side, seen from below, with its bony tissue well preserved. The anterior extremity is that towards the left hand, the line along which it met the corresponding plate of the right side being just above the scale of inches, and the exterior angle from which the ribs radiate just below the numerical ticket. The further extension upward towards the right is evidently connected with the plate, but perhaps not actually a portion of it.

The lower figure represents a similar plate from Biloela or Cockatoo Island, Port Jackson. It is apparently a secondary cast in sandstone, the bone having been replaced by the matrix. But if it is a primary cast, presenting a reversed image of the original structure, it must be regarded as belonging to the right side of the animal. The large holes have been formed by pebbles of shale, which had been embedded behind the plate, and, presumably, dropped out during the rough handling of the block in the processes of quarrying. A portion of the bone is still embedded in the matrix towards the upper right hand corner, but I have not ventured to attempt its release, until the specimen has been carefully examined by others.

NOTES AND EXHIBITS.

Dr. Ramsay exhibited (1) the supposed new species of birds from Derby, recorded in his paper; also from the same district, a new species of *Hapalotis,* with a broad golden-yellow dorsal stripe: (2) Large specimens of *matured* fruits of *Ficus stipulata,* grown at Dobroyde, showing the immense quantity of pollen developed at this stage in the fruit: (3) On behalf of the Government Geologist, Mr. C. S. Wilkinson, F.G.S., a series of fossil remains from some recently discovered deposits at a great depth, the most notable being the *skull, atlas vertebra, humerus,* and *scapula* of a gigantic *Echidna* belonging to quite a new form; also portions of the carapace and plastron of a fresh-water tortoise; and horned scutes, portions of the outer covering, and some bones of a great horned lizard (*Megalania*) making a third species of these gigantic reptiles now known. Dr. Ramsay also made some remarks on the fertilisation of *Ficus macrophylla* through the agency of insects.

Mr. Fletcher exhibited for Baron von Mueller specimens of *Grevillea Renwickiana, Pultenœa Baeuerlenii,* and *Bossiœa Stephensonii,* three of the plants described in his paper.

Mr. Norton produced from his own garden flowering specimens of *Cassia Brewsteri* a beautiful umbrageous shrubby tree from Queensland, and *Hernandia bivalvis* a handsome tree from the same colony; also, *Kreysigia multiflora* an ornamental liliaceous plant with pink flowers, from the northern rivers of this colony. All of these he recommended as well worthy of cultivation, and quite hardy in the neighbourhood of Sydney.

Mr. Whitelegge exhibited specimens of, and read the following note on, *Volvox minor*, Stein :—"A few days ago I found in a pool off Bourke-street, Waterloo, a fine gathering of *Volvox minor,* a species which I believe has not hitherto been recorded from Australia. I have seen what I thought to be this species many times, but without the ripe spores it is not readily distinguished from *V. globator.* Those I exhibit to-night contain not only mature spores, but the oospheres in various stages of development, and also the form known as *Sphaerosira volvox*, Ehr. This has usually been stated to be a peculiar stage of *V. globator*. After many years of observation, both in this colony and in England, my opinion is that it has nothing to do with that species, but is really the male plant of *V. minor*. In support of this view I may mention that so far I have failed to find any trace of antheridia, or any description of such organs, except those produced by *Sphaerosira*, and further the last-named is always associated with the plants containing oospheres of *V. minor*, and never with the true *V. globator*."

Mr. Whitelegge also exhibited specimens of *Lemna oligorrhiza* in flower.

Mr. Masters exhibited a large collection of Coleoptera lately made by Mr. Froggatt, at Port Douglas, numbering 500 species, many of them new. He also exhibited the nest of *Dicœum hirundinaceum* from the same locality.

Mr. Ratte exhibited specimens of crystallised and dendritic Gold from the casing of quartz leaders in mica schist, at Galaarino, New Caledonia, shewing a linear arrangement of sets of imperfect octahedra; and a small rhombic dodecahedron from Ballaarat. Also, a polished specimen of diabase porphyry, from Red Hill, between Ironbarks and Wellington, the polishing imperfectly effected owing to the brittleness of the augite crystals.

Mr. Macleay exhibited several large specimens of rock composed entirely of fossil leaves, received from Mr. Anderson, of Newstead near Inverell, and read the following note on them from Mr. Wilkinson the Government Geologist:—"These fossils are of Eocene Tertiary age, and with them fresh-water shells of the genus *Unio*, have been found. Several of the shells were exhibited by Profesor Stephens at a previous meeting of the Society."

WEDNESDAY, 29TH DECEMBER, 1886.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

The following gentlemen were present as visitors:—Mr. J. H. Parr of Manchester, Mr. Donald Fraser, Mr. W. Anderson, Geological Surveyor, Mr. Thomas Affleck, and Mr. A. J. Sach.

MEMBERS ELECTED.

Mr. W. W. Froggatt and Dr. Henry A. Ellis were elected members of the Society.

The President announced that the next excursion had been fixed for Saturday, January 15th. Members to meet at Manly at 11 a.m., to proceed to Narrabeen. Dr. Dixson in charge.

DONATIONS.

"Revue Coloniale Internationale." Tome III., Nos. 4, 5, 1886. From l'Association Coloniale Néerlandaise à Amsterdam.

"Transactions of the Geological Society of Australasia." Vol. I., Part 1, 1886. From the Society.

"The Aborigines of Victoria." (2 Vols.) By R. Brough Smith, F.L.S., F.G.S. "Victorian Year Book" for the years 1875-1885 (9 Vols.) By H. H. Hayter, C.M.G., &c.; "Catalogue of the Victorian Exhibition, 1861;" "Statistical Notes on the Progress of Victoria" (1835-1860). 1st Series, Part 1. By W. H. Archer; "Natural History of Victoria—Prodromus of the Zoology of Victoria." Decades IX. to XII. By Professor M'Coy, F.R.S.; "Census of Victoria, 1881. General Report, with summary Tables, Diagrams and Map." By H. H. Hayter, C.M.G.; "Report of the Secretary for the Department of Agriculture for the year 1884;" "Handbook to the Colony of

Victoria, 1885;" "Colonial and Indian Exhibition, London, 1886. Illustrated Handbook of Victoria, Australia;" "Catalogue of Exhibits in the Victorian Court." From the Premier of Victoria, through the Principal Librarian, Melbourne Public Library.

"Journal of the Royal Microscopical Society of London." Ser. II., Vol. VI., Part 5, 1886. From the Society.

"Zoologischer Anzeiger." Jahrg. IX., Nos. 235-237. From the Editor.

"Bulletins du Comité Géologique, St. Pétersbourg," Vol. V., Nos. 7, 8, 1886; "Mémoires," Tome III., No. 2, 1886. From the Committee.

"Comptes Rendus des Séances de l'Académie des Sciences, Paris." Tome CIII., Nos. 7-12. "Centenaire de M. Chevreul. Discours prononcés au Muséum d'histoire naturelle." From the Academy.

"Records of the Geological Survey of India." Vol. XIX., Part 4, 1886. From the Director.

"Annual Reports of the Department of Mines, New South Wales, for the years 1875-1879, 1881-1885"; "Official Catalogue of the Natural and Industrial products of New South Wales, forwarded to the International Exhibition of 1876, at Philadelphia;" "Official Record, Sydney International Exhibition, 1879"; "Census of New South Wales, 1881"; "The Industrial Progress of New South Wales: being a report of the Intercolonial Exhibition of 1870, at Sydney"; "The Industries of New South Wales." By Charles Lyne; "Statistical Register of New South Wales for the year 1883"; "The Timber Trees of New South Wales." By Arvid Nilson; "Report of the Executive Secretary on the Bordeaux International Exhibition of Wines, 1882"; "Report on the Infectious and Contagious Diseases in Stock prevailing in Europe." By Alex. Bruce; "Report on inoculation for pleura-pneumonia in Cattle." By Alex. Bruce; "Results of Rain and River Observations made in New South Wales during 1879, 1880, 1881." By H. C. Russell, B.A., F.R.A.S.; "Exploration of the Caves and Rivers of New South Wales (Reports, Correspondence &c.)"; "Tin-bearing Country, New England

(Report of Mr. Licensed Surveyor Wilkinson)"; "Catalogue of the Minerals and Rocks in the collection of the Australian Museum." By G. Krefft, F.L.S.; "Conservation of Water—First Report of the Commissioners, 1886"; "The Aborigines of Australia." By R. Sadleir, R N., J.P.; "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ, a disease discovered in some of the Western Counties of England, and known by the name of Cow-Pox." By Edward Jenner, M.D., F.R.S.; "Select extra-tropical plants, readily eligible for Industrial Culture or Naturalization." By Baron Ferd. von Mueller; "Mammalia, recent and extinct." By A. W. Scott, M.A.; "Report on Lunatic Asylums." By F. N. Manning, M.D. From the Minister for Public Instruction (N.S.W.) through the Government Printer, Sydney.

"Archives de Biologie." Tomes I.-V., VI. (Parts 1 and 2,) 1880-1885; "Zeitschrift für wissenschaftliche Zoologie." Band XL.-XLII., XLIII. (Heft 1-3,) 1884-1886; "Revue et Magasin de Zoologie." 3rd Series. Tomes V., VI., VII. 1877-1879. From the Hon. William Macleay. F.L.S.

"Proceedings and Transactions of the Queensland Branch of the Geographical Society of Australasia." 2nd Session. 1886-7. Vol. II. Part I. From the Society.

"The Forest Flora of South Australia." By J. E. Brown, F.L.S. Parts 1, 2, 4-7, with portfolio; "A Practical Treatise on Tree Culture in South Australia." By J. E. Brown, F.L.S.; "South Australia: its History, Productions and Natural Resources." By J. P. Stow; "Handbook of South Australia (Col. and Ind. Exhib. 1886)"; "Bibliography of South Australia." Compiled by Thomas Gill (Col. and Ind. Exhib. 1886); "North Australia: its Physical Geography and Natural History." By the Rev. J. E. Tenison-Woods, F.R.G.S., &c.; "The Northern Territory of South Australia, accompanied with a map"; "Woods and Forest Department—Annual Progress Reports upon State Forest Administrations in South Australia. 1881-1886." By J. E. Brown, F.L.S., Conservator of Forests; Professor Tate's Report on Northern Territory. Also eleven (11) Geological

Reports. From the Chief Secretary, South Australia, through the Government Printer, Adelaide.

"Bulletin of the California Academy of Sciences." No. 4, 1886. From the Academy.

"Proceedings of the Academy of Natural Sciences of Philadelphia." Part III., 1885. From the Academy.

"Journal of the Trenton Natural History Society." Vol. I. No. 1, 1886. From the Society.

"Verhandlungen der Kaiserl.-Königl. zoolog.-botan. Gesellschaft in Wien." Band XXXV., II. Halbjahr 1885. From the Society.

"Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg." VII.^{e} Série. Tome XXXIII, Nos. 3, 4, 1885. From the Society.

"Nova Acta Regiae Societatis Scientiarum Upsaliensis." 3rd Series. Vol. XIII., Fasc. 1, 1886. From the Society.

"Annales de la Société Royale Malacologique de Belgique." Tome XX., 1885; "Procès Verbaux des Séances." August 1885 to July 1886; "Statuts de la Société Roy. Malacol. de Belgique; deuxième édition." From the Society.

"Mittheilungen aus der Zoologishen Station zu Neapel." Band VI., Heft. 4, 1885. From the Director.

"Monatliche Mittheilungen des naturwissenschaftl. Vereins des Reg.-Bez. Frankfurt." Jahrg. IV, Nos. 4 and 5, 1886. From the Society.

"Chemical Handicraft—A Classified Descriptive Catalogue of Chemical Apparatus, &c." By J. J. Griffin, C.E. From Mr. J. H. Maiden.

"Diseases of Field and Garden Crops, chiefly such as are caused by Fungi." By Worthington G. Smith, F.L.S. From E. Haviland, F.L.S.

"Victorian Naturalist." Vol. III., No. 8, 1886. From the Field Naturalists' Club of Victoria.

"Abstract of Proceedings of the Royal Society of Queensland, 3rd December, 1886." From the Society.

"Bolletino dei Musei di Zoologia ed Anatomia comparata, della R. Universita di Torino." Vol. I, Nos. 9-15, 1886. From the Director.

"On a new species of Wild Pig from New Guinea," and "Ueber Vögel der Südsee—Auf Grund eigener Beobachtungen und Sammlungen." By Dr. O. Finsch, C.M Z.S. From the Author.

"Feuille des jeunes Naturalistes." No. 193, 1886. From the Editor.

"Transactions of the Entomological Society of London for the year 1886." Part III. From the Society.

"Abstract of Proceedings of the Royal Society of Tasmania." November 22nd, 1886. From the Society.

"Catalogue of the Blastoidea in the Geological Department of the British Museum (Natural History) with an account of the Morphology and Systematic Position of the group, and a Revision of the Genera and Species." By Robert Etheridge, jun., and P. Herbert Carpenter, D.Sc., F.R.S., &c.; "A Guide to the Exhibition Galleries of the Department of Geology and Palæontology in the British Museum (Natural History)." From the Trustees.

"Journal of the Cincinnati Society of Natural History." Vol. IX., No. 3, 1886. From the Society.

"The Canadian Record of Science." Vol. II., No. 4, 1886. From the Natural History Society of Montreal.

"The Fern World of Australia, with Homes of the Queensland species;" "Catalogue of Plants in the two Metropolitan Gardens, the Brisbane Botanic Garden and Bowen Park;" "Classified Index of the First Supplement to the Indigenous and Naturalised Plants of Queensland, with an Alphabetical Index of genera of the first part of the work;" "Queensland Woods—Catalogue of the Indigenous Woods contained in the Queensland Court, Colonial and Indian Exhibition of 1886." "A Synopsis of the Queensland Flora, containing both the phanerogamous and cryptogamous plants." By Frederick Manson Bailey, F.L.S. From the Author.

"The Scottish Geographical Magazine." Vol. II., No. 11, 1886. From the Hon. William Macleay, F.L.S.

ON NEW OR RARE VERTEBRATES FROM THE HERBERT RIVER, NORTH QUEENSLAND.

BY C. W. DE VIS, M.A.

HALMATURUS sp.

The pademelon of the Herbert district is a member, apparently undescribed, of the *thetidis* group—of which it has the familiar haunch-stripe and red shoulders. It seems to resemble greatly *H. Wilcoxi*, McCoy; a species not yet in the hands of the writer—further comment upon it is therefore deferred.

PHALANGISTA VULPINA.

From the forest on the summit of Mount Echo, Mr. Broadbent, in a late trip to the Herbert Gorge, obtained a single example of a red 'possum.' In a family shewing so strong a tendency to the assumption of rufous colouring, that tint, however well marked, is, for determinative purposes, quite unreliable. Though shorter in the ear, broader across the muzzle, stronger in the teeth, and apparently longer in the limb than the ordinary *P. vulpina*, it fails to convince one that it is anything more than a variety of that animal. But as it may prove to be a permanent variety of restricted habitat, and is certainly extreme in its chromatic variation, a description of it may not be altogether useless. The usual coffee-coloured streak on the chest and throat is well developed, and, passing faintly over the side of the neck, spreads with a bright tint over the occiput, nape and mantle. On the back and outer side of the limbs the colour becomes rufous, the hair of the upper back being at the base, red, of the lower back and limbs yellow, the tips of the hairs on the body partly shining yellow, partly black, those of the limbs black. The dark rufous colouring of the upper surface ends abruptly on a line drawn from the armpit to the knee—below this the flanks and anteriorly the lower throat are buffy yellow becoming golden-yellow on the middle of the abdomen, and bright coffee-colour before the scrotum and around the vent. The ears are pale yellow externally, and the black patch at their base is almost obsolete. The customary markings on the head are recognisable, the fore feet brown, hind feet brownish-red, major part of tail black. The fur (winter coat) is short and crisp, the coarse hair of the tail short. The size is considerably larger than in ordinary Queensland examples of *P. vulpina*, and the contrasted colouring gives the animal a very different aspect.

PSEUDOCHIRUS MONGAN, n. sp.

There is reason to fear that the describer of *Phalangista* (*Pseudochirus*) *Herbertensis* has been led into a mistake in his determination of the sexes of that *Phalanger*. It would appear that in the mountain-top scrubs of the Herbert Gorge there are two associated species of *Pseudochirus*, and that these are, curiously enough, not distinguished from each other by the natives of the locality, who give to them the common name 'Mongan.' From such community of name has probably resulted an idea that they are identical, and this, communicated to Mr. Collett, has no doubt misguided him in his determination. Trivially we may distinguish between the White-armed Mongan and the Brown Mongan; systematically we may preserve the native name in the binomial of the latter and apparently more abundant animal.

Adult male—the colour of the upper surface, from the forehead to the base of the tail, is a dark lustrous brown—the hairs of the back are greyish-brown at the base, and the majority of the longer hairs have their distal halves either dark rufous-brown or rufous-yellow, the latter yielding a ruddy sheen which is more or less lost on the limbs and entirely so on the tail. The dark brown of the upper surface descends broadly on the chin becoming however paler as it approaches the mid-line. The throat and mid-line of the chest and abdomen (including the scrotum) are white, as are also the inside of the arm to the elbow and of the thigh to the knee. A stripe of grey separating clearly the dark brown of the upper surface from the white of the lower runs along the side of the chest and abdomen. The terminal fourth or a little more of the tail is white. The ears are narrow and short appearing but little above the fur. The muzzle is nearly devoid of hair for a space of 5 mm. behind the tip and behind the posterior edge of the nostril. The hands and feet are large, and the nude surface of the tail is beset with prickly tubercles. Length of the head and trunk 13½ in. (343 mm.), tail 15½ in. (413 mm.).

The adult female is, on the upper surface and inside the limbs, smoky brown with little lustre, and that chiefly on the nape and shoulder. On the loins and rump the colour deepens to a blackish-brown. Chin pale brown. Throat and behind the pouch dirty white. Rest of the lower surface brownish with admixture of much greyish-white, within the pouch chestnut.

The hands and feet are much smaller than in the male, and the nude surface of the tail is comparatively smooth. (These sexual characters are common to this species and to *P. herbertensis.*)

The skull extracted from this skin is so closely represented by the figure of that of *P. herbertensis* ♀, in Proc. Zool. Soc. 1884, p. 384, as to persuade one that it is specifically the same as the original of the figure.

But a doubt remains—the females of the two species may be so nearly alike as to require for their determination a direct comparison of skins. All doubt on this score is removed by an example of an indubitable female of *P. herbertensis* captured in the society of an adult male, and equally out of accord with Mr. Collett's description and its sombre subject. The upper surface of this sex of *P. herbertensis* is even more nearly black than in the male; the lower surface as purely and definitely white. Above the elbow the arm is encircled by a white ring, narrow but distinct. There is however no trace of a similar ring around the thigh, as developed to a greater or less extent in the mature male.

Though a decidedly larger animal than *P. mongan* its skull is distinctly smaller, somewhat shorter, and in a greater ratio narrower between the zygomatic arches across the palate and in the teeth, which however present no other appreciable difference. The frontal crests are feebler and the parietal crests rise less high and more angularly upon the sides of the cranium.

Different as the two females are side by side, it was but natural to attribute *P. mongan* ♀ to *P. herbertensis* ♂, as long as the other sex of each was absent.

THE BRILL.

The Brill is the Flying Phalanger of the scrubs which clothe the tops of the Main Range, north of the Herbert River. In almost all its superficial characters it is not to be distinguished with certainty from the long and well known Petaurist, *P. taguanoides*, of the forest plains; but from all Queensland examples of *taguanoides* in the hands of the writer it is externally differentiated by the shortness of its ears. This peculiarity would have failed to create more than a passing suspicion of its distinctness, had not an examination of the skull suggested by it, revealed differences which appear to show that it has some real significance. In general form and proportions indeed the skull closely resembles some Queensland crania of *taguanoides*, but structurally it differs from them all in at least one rather important particular, the size and shape of the tympanic canal. This in *taguanoides* is constantly wide, cylindrical and conspicuously exserted—in the subject under notice the free outer wall of the tube is flattened and so much adpressed as to be barely visible on the lateral aspect of the cranium when viewed from behind. The meatus is thus rendered comparatively narrow and its aperture oval. A modification in one organ naturally invites attention to another, and turning, not without expectancy, to the teeth, we find in them individually and serially indications of changes taking place which are the more valuable in that these organs are in *taguanoides* proper subject to very little variation. The molar battery is considerably shortened—its length in the upper jaw goes 3½ times into that of the entire skull, whereas in the ordinary form it goes but 3 to 3⅙ in the same length. In form it differs no less; attenuation at either end together with increased convexity on its outer side renders it comparatively crescentic in shape. The alveolar tract of the premolar and canine is on the other hand sensibly concave externally—that of the whole dental series is therefore slightly undulatory, while in *taguanoides* it is uninterruptedly convex outwards. The molars, compared with those of typical skulls, have a peculiar facies arising from the obliquity of the cross valleys and much greater smoothness of the grinding surfaces. In the three foremost of the permanent molars there is but a remnant of the sharp enamel fold at the base of each of the outer cusps seen in *taguanoides*, these cusps themselves have much less asperity, and the inner cusps are reduced to a mere prominence of the border of the anterior angle of the tooth, the hinder of them having become obsolete. In contour the chief difference is presented by the last molar which is relatively narrower and more regularly trilateral.

In the lower jaw the premolar is considerably smaller than in any available mandible of *P. taguanoides*. Also its subsidiary lobes both fore and aft are disproportionately smaller than the principal one. The first permanent molar is tricuspidate; the anterior moiety of the tooth, cleaved in *taguanoides* by an oblique sulcus, being here undivided—posterior to it the grinding surface of this and of the rest of the molars is formed by a series of broad shallow subcircular basins, bounded externally by much less prominent cuspidate angles than those of *taguanoides*, tilted more strongly outwards and crossing the alveolar axis more obliquely. There is further a notable difference in the shape of these lower grinders arising from the absence of the strong anterior and mesial contractions which in *taguanoides* give them somewhat the look of a series of aludels in place—in the mandible under notice the valleys are nearly of the full width of the crowns. The diastema is longer and slopes more gradually forward to the outlet of the incisive socket than in *taguanoides*. It has no trace of teeth overtly, but in this respect the animal probably varies as much as *taguanoides* itself, which has in Queensland examples from one to three diastemal teeth, and on the other hand is said to be frequently devoid of them.

The cranial, still more the dental modifications exemplified by this skull, would doubtless have sufficed to distinguish a species had they occurred in a fossil subject, and one cannot help feeling surprise that they are not accompanied by external characters as clearly distinctive. The absence of these, and the possibility that the Herberton Petaurist may be found to vary in dentition sufficiently for its full identification with normal representatives of the species, must give us pause to await further material. At present one fails to observe a superficial character that may not be paralleled amongst the variations of the recognised species. Further material is not easily procurable. The animal inhabits a part of the Herberton Mountains haunted as yet by a wild and dangerous tribe of blacks, and the collector, Mr. Broadbent, was unable to procure more than a single specimen.

DROMICIA FRONTALIS, n. sp.

The occurrence of a Dromicia in Queensland has not, so far as the writer can ascertain, been placed on record, and no example of a species existing in the southern part of the colony is known to him. It was therefore with pleasure that he found a representative of this very interesting link-form in the Herberton collection. Three specimens caught in the same tree by a blackfellow were brought to Mr. Broadbent—all three of the same age and size. The two which are females have their pouches open, but whether they have borne young is very doubtful—from their stage of dentition they cannot be more than two-thirds grown. Immature as they are, however, they are well characterised, and cannot be confounded with *nana*, *concinna*, or *unicolor*. They may be described as *D. frontalis* (" Cubbie-cubbie" of the natives).

Fur short, not extending on to the tail; tail not incrassated at base; nails and pads of second and third toes separated; a distinct patagial fold; colour above varied, beneath uniform; size small.

On the upper surface greyish fawn, rather darker on the vertex and occiput (in one ♀ example on the nape also). Forehead and a line passing over the eye and root of the ear pale fawn, with a darker mesial stripe (conspicuous in spirits) running forward to the muzzle. Eyelid and around the eye dark brown in a patch extending a little forwards on the face. Edge of the ear internally, and anterior half externally dark grey. Hinder half of the ear white. A dark brown streak runs down the side of the neck and expands on the fore part of the arm. On the back of the thigh is a less distinct patch of similar colour. Upper surface of manus and pes brown. All the lower surface yellowish-white. This extends over the upper lip, to the back of the ear, over the edge of the lateral fold and around the distal end of the leg.

The fur is short and silky and terminates at the rump. The base of the tail is contracted and sparsely covered with hair; it consequently appears lighter in colour than the rest of the tail on which the hair is moderately close, long and of a dark brownish grey above, recumbent, with a distinct tendency to form a fringe on either side. The under surface of the tail is more scantily clothed with shorter white hair continued centrally to an eighth of an inch from the tip, and laterally nearly to the tip. The ear is short, rounded and broad at the base, well clothed externally and fairly well internally with short hair. The muzzle is broad and obtuse. The hair on the hinder part of the face is elongated and spreads vibrissæ-like over the root of the ear. The claws are well-developed and exserted. The fleshy pads of the manus and pes are nearly smooth, the central pad of the manus and terminal pads of the pes being alone slightly striated longitudinally.

The length of the head and body is 1·7 inch (43 mm.), of the tail 1·65 inch (42 mm.).

NINOX BOOBOOK, var. LURIDA.

Taking due heed of the possibility that the little owl to be noticed may be a dwarfed variety of *N. boobook,* the writer refrains from giving it a specific name; at the same time he is induced to point out its distinctive features by a wish to maintain the usefulness of Mr. Sharpe's key to the genus.

Synoptical characters.

Breast spotted.
Head uniform, brown.
Belly chestnut-brown, densely spotted.

Adult males—head and all the upper surface, including wing and tail-coverts, deep smoky brown; uniform or tending to coffee-brown on the hind neck and scapulars—the latter with a large white spot on each outer web and frequently a smaller one on the inner. One or two small buffy spots on each side of the hind neck. Primary coverts dark brown. Quills dark brown washed with rufous on the inner edge as far as the notch, and imperfectly barred on the inner web with more or less distinct and elongated spots not reaching the edges. Inner secondaries with a series of white or buff spots on the inner webs, outer secondaries not or very indistinctly barred with buff on the outer web. Forehead grey; loral pencils whitish with black shafts and tips. Fore part of cheeks and chin impure white; ear-coverts brown; a narrow eyebrow and post-auricular are rufous; middle of throat rufous, each feather with a blackish central streak. Rest of the under surface chestnut brown, uniform or fading to buffy white around and before the vent. Each feather with a spot of white on either web, the spots diminishing in size but remaining distinct as far forwards as the hinder edge of the throat. Leg feathers short, fawn or coffee-brown. Under tail-coverts similar in colour with a spot of white on each web most distinct on those of the basals. Under wing-coverts rufous, the outer mottled and streaked with dark brown. Edge of the wing buffy white. Bill black to a very variable extent from the base, lead-colour in life. Feet dusky, white in life. Total length 11 inches, wing 8·25, tail 5, tarsus 1·25, middle toe 1·33.

Hab.—Dark thick scrubs, a few miles from Cardwell.

Two specimens.

NINOX RUFA, *Gould.*

Three adult examples of this fine owl occur in the collection. It is difficult to conceive its identity with *N. strenua*, Gld., and until connecting forms present themselves it is more convenient to name both in our lists.

VARANUS, sp.

Teeth obtuse, sub-compressed; snout broad, depressed, measured from the anterior angle of the eye equal to the distance therefrom to the anterior border of the ear-orifice; tail depressed at the base, moderately compressed posteriorly; scales of the head large, flat, irregular in size and shape, largest between the orbits, those of the supraorbital and temporal regions smaller; no enlarged series of supraorbitals; scales of the back oval, much longer than broad, tectiform, of the tail keeled and subspinose, the median pair above elevated, strongly keeled and forming a subspinose groove; abdominal scales in 86 rows, smooth and flat; nostril nearer to the tip of the snout than to the angle of the eye; canthus rostralis rather sharp; grey above with darker spots of two or three scales each on the sides, confluent into reticulating lines on the back; under surface with numerous pale grey transverse bars; base of tail above varied with paler scales, for the rest uniform.

Locality—Herbert River; collected by Mr. K. Broadbent.

Notwithstanding the perfect smoothness of the abdominal scales, and also entire absence of enlarged superocular scales, one cannot dismiss a suspicion that this is a local variety of *V. prasinus*. On one side of the head a single superocular scale, broader than long, is surrounded by a ring of smaller scales; on the other side even this faint approach to a serial differentiation of the scales is wanting, certainly a very different state of things to that which obtains in *V. prasinus*. However, a notice of the lizard, if further examples prove it to be really *prasinus*, will at least serve to record the presence of that species on the mainland of the colony.

NOTE ON THE EGG OF THE REGENT-BIRD, *SERICULUS MELINUS, Lath.*

By Dr. E. Pierson Ramsay, F.R.S.E.

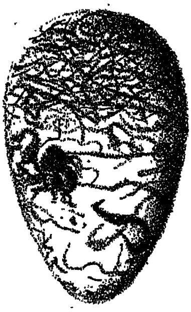
(Plate XIX., fig. 4.)

Recently, having had several communications from numbers of this and other Scientific Societies in Australia and Great Britain asking for information and a description of an authentic egg of this bird, I venture to offer to the Society a carefully made description and coloured figure of an egg taken from the oviduct of the bird itself, from which it will be seen that most of—I may say nearly all, the so-called Regent-Birds' Eggs in the hands of collectors both in this and the neighbouring colonies are not authentic.

Sericulus melinus, *Lath.*

Egg.—The ground-colour is of a delicate white with a faint shade of French grey; towards the thicker end is a zone of irregularly shaped spots, some being confluent; these are of a light lilac or bluish-grey and appear beneath the surface of the shell, over which, and on the remaining surface of the egg, are irregular angular lines and linear markings and letters of sienna and brown, forming loops, crosses, and arabic-like marks and figures, some resembling the figures 4, 6, 7, 8, 3, &c., &c., and in one place at the thinner end an irregularly formed capital M. Very few of the lines quite encircle the egg, but many cross and recross each other over the surface towards the thicker end; the thin end has a few similar shorter detached marks. Length 1·35 inches by 0·9 inch.

1



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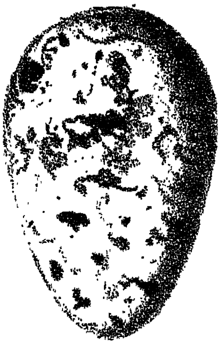

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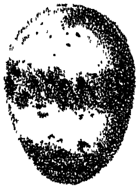

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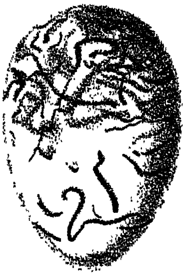

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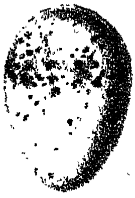

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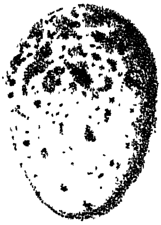


G H Barrow del. et lith.

NOTES ON THE NESTING OF *PYCNOPTILUS FLOCCOSUS* (*Gould*), IN N.S.W.

BY DR. E. PIERSON RAMSAY, F.R.S.E., F.G.S., &c.

(Plate XX.)

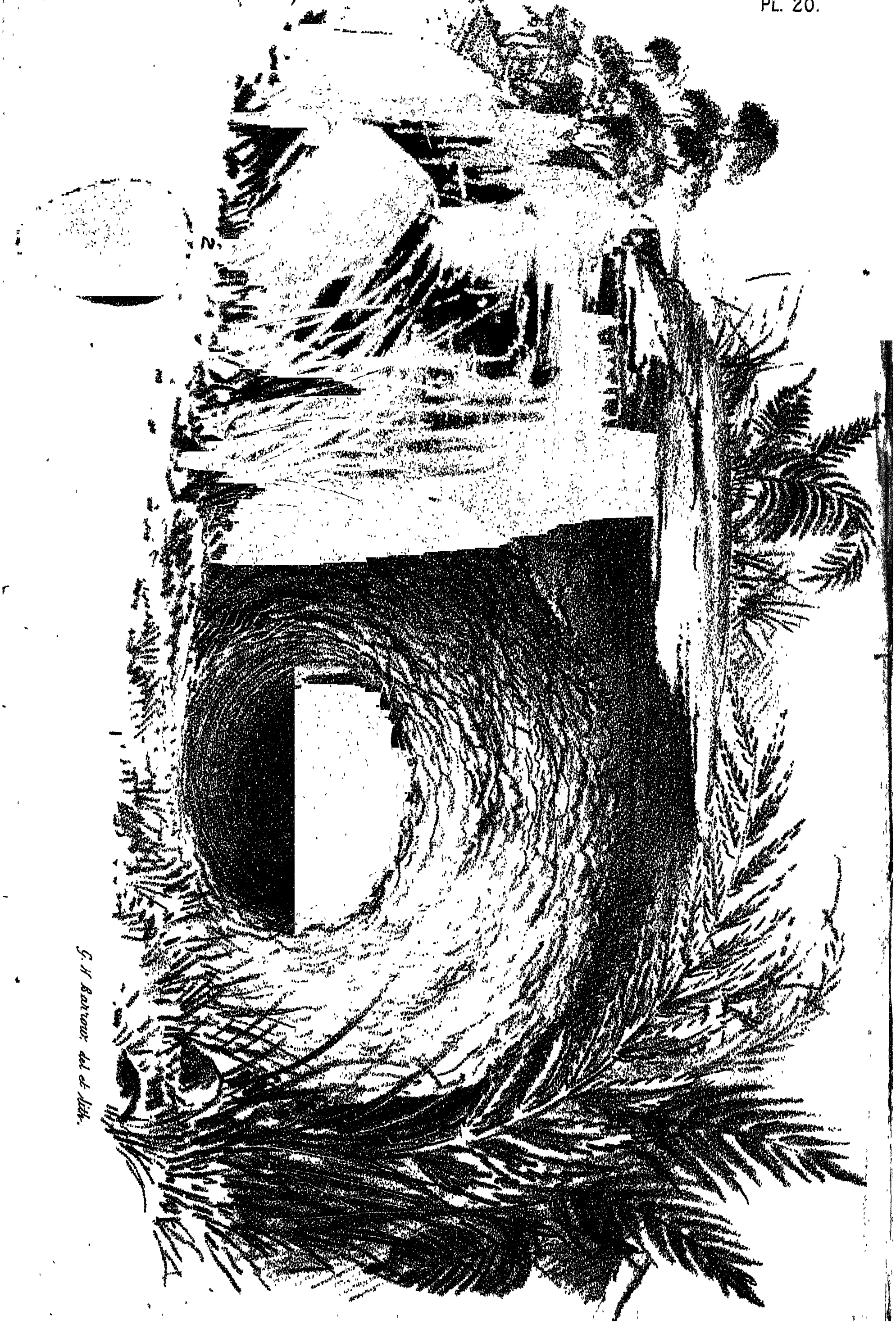
Some months ago I made some remarks on the occurrence of this hitherto scarce bird in N. S. Wales, prior to which it had only been recorded from our more southern provinces. Our taxidermist, Mr. J. A. Thorpe, procured some beautiful specimens in the flesh at Cambewarra, about 100 miles south of Port Jackson; and Mr. Yardley, of that district has forwarded quite recently the nest and eggs taken by a Mr. Sinclair, a timber-getter working in the adjacent scrubs. The nest, I am informed, was placed on or very near the ground among some *débris* on a bank or slope; it is a rather loose structure, built of shreds of bark chiefly, and lined with feathers of various kinds, among which may be distingushed those of the Lyre bird, Cat-bird, and some of the Pycnoptilus itself. In form it is somewhat dome-shaped, placed on its side and with a large, rough ill-defined opening, which was probably narrowed by the adjacent *débris* among which it was placed.

The eggs, two in number for a sitting, are in tint of a dark rich purplish brown like those of *Sericornis citreogularis,* with an indistinct zone at the larger end of a blackish tint, and a few ill-defined obsolete spots of the same on the other parts; they are smaller and more dot-like nearer the thin end, where the ground-colour is slightly lighter in tint; they measure as follows (A.) 1 inch, by 0·75, and (B.) 0·95 inch by 0·75 inch. They are decidedly swollen and much shorter in proportion, but otherwise very like the dark variety of the eggs of the *Sericornis citreogularis.*

Mr. A. J. North, of Melbourne, who took a nest of this species so far back as October, 1878, at Childers, in South Gippsland, and exhibited the first specimens I had seen, at the International Exhibition held in Melbourne, 1880, informs me that this species was very plentiful in that district up to 1881, but the numerous clearings made by the "selectors" have since driven the birds to other parts. The eggs he states show no difference from those here described, except that some are slightly longer, and not so swollen as others.

EXPLANATION OF PLATE XX.

Fig. 1, Nest, and fig. 2, Egg of *Pycnoptilus floccosus*, from the Cambewarra District.



G. H. Barrow del et lith.

DESCRIPTIONS OF AUSTRALIAN BIRDS' EGGS.

By Dr. E. Pierson Ramsay, F.R.S.E., M.R.I.A., &c.

(Plate XIX., figs. 1-3, 5 and 6.)

At the request of several of my friends in the country, who are interested in Australian Oology, but have not access to collections containing authentic specimens of eggs, I beg to submit the following descriptions of such as are rare, or, in my own opinion, have been imperfectly or incorrectly described.

Astur radiatus, *Lath.*

I take the following description from my note book, under date October 11th, 1884, p. 25.

'The egg of *Astur radiatus*, just received from Mr. Barnard, of Coomooboolaroo, in the Dawson River District, Queensland, is much like a large egg of *Astur approximans* or that of *Aquila morphnoides*. It is of a dull white, roundish, with a few blackish brown smears and blotches, and irregular markings and dots of a slightly darker shade; the shell is slightly rough. Length 2·2 inches, diameter 1·8 inches.' (*No.* 147).

Astur approximans, *Vig.* and *Horsf.*

The eggs in set No. A, are of a long narrow oval; colour dull white, smeared with yellowish-buff; length 1·74 inches by 1·3, inches. A second set, No. B, show smears to a less extent, and there are a few scattered spots of a deep reddish-brown; form a round-oval. Length 1·75 inches × 1·4 inches in breadth. (*Note-book,* 1880-1, *p.* 5.)

Haliastur sphenurus, *Vieill.*

Egg roundish, white, with a slightly bluish tinge on the inner surface of the shell, with numerous dots, a few spots and irregular markings of dull yellowish-brown. The shape of some specimens is a true oval, equal at both ends, but swollen in the centre. Length 2·15 inches × 1·8 inches in breadth. (*Note-book*, 1882, *p*. 33.)

FALCO SUBNIGER, *Gould.*

It is through Mr. K. H. Bennett's exertions and liberality that I am enabled to describe the eggs of this rare species, taken by himself on the 27th of September, 1884. There were four laid for a sitting, which closely resemble large specimens of the Merlin's, and are not unlike finely freckled eggs of *Hieracidea*, but of a richer or brighter red, the ground-colour being obscured with rich reddish dots and freckles all over the surface; in some these dots form confluent markings on one end of the egg, or patches on the side; they are almost identical in colour and shape with those of *F. hypoleucus*, but larger; the shell is of finer grain than is shown in those of the *Hieracideas*. In form they are almost true ovals being but slightly swollen at the thicker end; one is rather elongate in form. Length (A) 2·1 × 1·6 inches; (B) 2·13 × 1·58 inches; (C) 2·18 × 1·55 inches.

STRIX CANDIDA, *Tickell.*

I am indebted to my friend Mr. A. J. Boyd for a set of the eggs of this species taken in the Herbert District, Queensland; like those of all others of the genus, they are white, but have a slight bluish tinge; in form oval, rather swollen about the centres; length (A) 1·68 inches × 1·25 inches in breadth; (B) 1·7 inches × 1·25 inches.

EUROSTOPODUS ALBOGULARIS, *V.* and *H.*

Having recently received from Mr. A. Clark a very fine specimen of the egg of this species, which differs in size and colour from all I have before examined, I cannot let the occasion slip by without describing so fine a specimen. The eggs taken at Gootchy by Mr. D. Helsham, were evidently quite authentic, as the bird was flushed off the egg, and several specimens shot by myself at the time. The Gootchy eggs are smaller than the present specimen, but slightly larger than those of *E. guttatus.* The egg at present under consideration in size is almost as large as that of *Podargus humeralis.* The egg from Gootchy is 1·53 x 1·05 inch; colour light cream with black round dots. That received from Mr. A. Clarke, is of a rich deep cream-yellow, having on one side a cluster of round black spots, which touch one another here and there, and a few similar dots sprinkled over the remaining surface; length 1·55 inches x 1·15 inches in breadth. In consequence of the great width of the egg it appears to be larger than it really is.

SPHENURA LONGIROSTRIS, *Gould.*

Ground-colour whitish, spotted freckled and dotted all over, but more closely on the thicker end, with dark wood-brown. Length 0·9 inch × 0·72 inch. Taken by Mr. George Masters at King George's Sound, West Australia.

AMYTIS STRIATUS, *Gould.*

The eggs of this species closely resemble those of *Ptenœdus rufescens.* The ground-colour is white, almost obscured towards the thicker end with freckles and dots, forming confluent spots of rich red; in some forming a zone, in others extending in an irregular patch over the end. Length 0.85 × 0·65 inch. Taken by Mr. K. H. Bennett at Mossgiel.

RHIPIDURA SETOSA, *Quoy et Gaim.*

Similar to that of *R. motacilloides*, but much smaller. It is of a light cream colour, with dull wood-brown spots forming a zone at the larger end. Length 0·68 × 0·55 inch. Taken by Mr. Alex. Morton at Port Darwin. Other specimens similar, but with larger and better defined markings have recently been received from Mr. T. H. Boyer-Bower, from Derby.

RHIPIDURA RUFIFRONS, *Lath.*

This species, although a constant visitor to Sydney and the neighbourhood, seldom breeds except in the thick brushes of Illawarra, or such-like localities. The eggs are two for a sitting, of a pale cream colour, or creamy white, with a zone of spots and dots of light wood-brown, and a few dots of lilac, the markings being confined to the zone, with the exception of one or two large dots on the remainder of the surface. Length 0·7 × 0·52 inch. *(From Mr. Ralph Hargrave's Coll.)*

PIEZORHYNCHUS ALBIVENTRIS, *Gould.*

Monarcha albiventris, Gould, *Supp. Bds. Aust. pl.* 13.

From the British Museum Catalogue of Birds, Vol. IV., pp. 418-19, I gather that the true *Piezorhynchus trivirgata* of Temminck is not found in Australia, and that the bird figured by Gould under this name must therefore be a distinct species, which Mr Sharpe names *P. gouldii.* Against this I have nothing to say, but it may be as well to remark that the bird which we recognise here as Gould's *P. trivirgata,* viz., Sharpe's *P. gouldii,* is not the same as the white-bellied species *P. albiventris* of Mr. Gould, nor is it found farther north, as far as I know, than the Burnett and Burdekin Rivers, but it is found as far south as the Hunter ; and I have eggs taken by Macgillivray on the Clarence River. I also met with it on the Richmond River. I hold that Gould's *P. albiventris* is a good species confined to the north, and quite distinct from its southern representative in N.S.W., *P. gouldii.*

Having previously described the nest and eggs of *P. gouldii,* Sharpe, (*Monarcha trivirgata,* of Gould), and of *Monarcha melanopsis,* Vieill. (*M. carinata,* V. and H., Gould's Bds. Aust., pl. 65), I need only mention that these descriptions will be found in the *Ibis*; of the former, *M. trivirgata* of Gould, in *Ibis,* Vol. IV., n. s. 1868, p. 271, and of the latter, *M. carinata,* in the *Ibis,* 1865, Vol. I. n. s., p. 302.

The nest of *P. albiventris* is similar in every respect to that of *Monarcha melanopsis,* Vieill., only slightly smaller, and the eggs of the several species are scarcely to be distinguished from one another except by their size. Those of *P. albiventris,* Gould, measure 0·8 in length × 0·56 inch. The ground-colour is white, the whole surface being sprinked over with freckles and dots of bright red, which becoming confluent near the thicker end, there form a zone.

PŒCILODRYAS SUPERCILIOSA, *Gould.*

The nest of this species somewhat resembles that of an *Eöpsaltria.* The eggs also resemble those of *E. australis* (Lath.), but are much smaller. The ground-colour is of a rich apple-green, but in some of a bluish tint; some are zoned and sprinkled with spots, others have irregular or confluent blotches of reddish brown. Two eggs are considered by this bird sufficient for a sitting. Length (A) 0·78 × 0·56 inch; (B) 0·8 × 0·55 inch; (C) 0·77 × 0·57 inch; (D) 0·9 × 0·55 inch, this last being an elongated abnormal specimen. They were taken, and the birds shot by Mr. Ed. Spalding at Rockingham Bay in 1868.

EOPSALTRIA GULARIS, *Quoy* et *Gaim.*

E. griseogularis, Gould, Handbook, sp. 176.

Eggs, two or three for a sitting. The ground-colour is of a pale apple-green, with a zone of dots and spots round the larger end of a light reddish-brown; they approach in tint faded eggs of *E. nana*, Ramsay, but are much larger. Length 0·83 × 0·6 inch. Taken by Mr. George Masters at King George's Sound, West Australia.

MALURUS MELANOTUS, *Gould.*

Eggs like those of *M. cyaneus*, from which they are not to be distinguished; white, with rich red dots, spots, and in some, blotches scattered all over the surface, crowded on one end, or forming a broken zone near the thicker end; the size of an average specimen is—long axis, 0·63 inch; short axis, 0·48 inch; of a heavily blotched specimen, 0·65 × 0·45. (*Dobr. Mus. Coll.*).

MALURUS CALLAINUS, *Gould.*

This wren, one of the latest species described by Mr. Gould, is far from rare in the interior, my brother Mr. James Ramsay having no difficulty in obtaining as many specimens as I required during one season, both of its nests and eggs, with the birds shot therefrom. Although the eggs appear quite different from those of other species of the genus, still it is difficult to express these differences in a description. Eggs white or pinkish white, with minute dots and small spots of rich red sprinkled over the whole surface, in some forming zones, in others blotches. What I consider the more typical eggs of this species, are those with a few dots of dark red sparingly sprinkled over the whole surface of the shell, closer together on the thicker end, but seldom forming a distinct zone ; all more or less pointed ; (1), 0·67 × 0·48 inch ; (2), 0·67 × 0·48 inch : (3), 0·66 × 0·48 inch. (*J. R , Dobr. Mus.*)

MALURUS LAMBERTI.

The eggs of this species cannot be distinguished from those of *M. cyaneus* or many others of the genus ; two of this species before me are heavily blotched with red, forming a zone on the thicker end ; another has the spots smaller and sprinkled over the whole surface. Length (1), 0·64 × 0·48 inch ; (2), 0·65 × 0·47 inch.

FALCUNCULUS FRONTATUS, *Lath.*

Although this species breeds freely in the neighbourhood of Sydney, its nest is seldom met with, and its eggs are still rarer. This arises chiefly from the inaccessible places in which the birds build, the very tops of the tall Eucalypti, so that even when found, they are seldom procurable.

The nest is a deep cup-shaped structure of fine shreds of bark strongly woven together, and strengthened with cobweb, and lined with grasses.

The eggs, seldom three in number, resemble those of *Myiagra nitida*, but are more elongated ; white with a few dots of greyish lilac and slaty black sprinkled over the surface, but in some crowded on the thicker end, where some are confluent, forming spots or irregular short linear markings. Length (A) 0·9 × 0·65 inch (Dr. Hurst's, Coll.) ; (B) 0·85 × 0·63 inch ; (C) 0·92 × 0·64 inch ; B and C have no irregular markings on the shell, merely a few minute dots almost black. A description of the egg of *Falcunculus leucogaster* will be found in Gould's "Handbook to the Birds of Australia," I. p. 230.

GEOCICHLA MACRORHYNCHA, *Gould.*

The nest and eggs very much the same as those of *G. lunulata*, Lath., but are larger ; the eggs are three for a sitting, of a greenish white, strongly freckled all over but more numerously at the larger end with rich reddish-brown ; some confluent markings take a longitudinal direction or run obliquely with the long axis of the egg. An average specimen measures 1·33 inches in length × 0·95 inch through its short diameter.

AMADINA MODESTA, *Gould.*

During the years 1863 to 1866, this species, from a few pairs of escaped birds, had bred and multiplied considerably in the neighbourhood of Eastern Creek and Blacktown, &c. They also appeared on the Bell River, near Cardington, where several nests were taken by my brother, Mr. J. S. Ramsay, 24th December, 1869. Nests like all others of the genus, and the eggs white, 4 or 5 for a sitting, roundish; in length 0·6 × 0·46 inch ; 0·57 × 0·54 inch ; 0·6 × 0·5 inch ; 0·6 × 0·5 inch.

DONACICOLA CASTANEOTHORAX, *Gould.*

This species is widely distributed over the whole of N. S. Wales and Queensland. It breeds plentifully in the extensive grass-beds of the Clarence and Richmond River districts, also at Maryborough, Q. Eggs five seldom four, white; length 0·64 × 0·48 inch ; 0·65 × 0·48 inch ; 0·67 × 0·5 inch ; two other eggs from same nest are slightly smaller. Taken at Iindah, Mary River, 19/2/72.

POEPHILA CINCTA, *Gould.*

This species was formerly abundant in the neighbourhood of Rockhampton, but during my visit to those parts in 1869-70, not a specimen could be found, the bird having been entirely exterminated by the "trappers," for the European markets. It is thinly dispersed over the country to the north, but is replaced in the Gulf districts by its near ally *P. atropygialis.* It nests in the long grass and Pandanus bushes. Lays five eggs of a bluish white, elongated in form. Length 0·7 × 0·48 inch; 0·72 × 0·5 inch. We have at present, among others, both *P. cincta* and *P. longicauda* breeding in our aviaries.

POEPHILA GOULDIÆ, *Gould.*

This species and the one known as *P. mirabilis* have been found breeding in company upon numerous occasions. Both are plentiful inland from the Gulf district to Derby in West Australia. The nest is similar to others of the genus, composed of dry grasses without any other lining. The eggs are white, slightly pyriform in shape. Length (1) 0·64 × 0·49 inch; (2) 1·65 × 0·5 inch. Five are laid for a sitting. (From Dr. Hurst's Coll.)

ESTRELDA PHAETON, *Homb. et Jacq.*

The eggs here described were taken by Mr. J. Rainbird in 1864, from some of the nests at that time common on extensive grass lands near Port Denison. The nest is like all others of the family, a flask-shaped structure of grasses, with a long narrow entrance, placed on its side in any convenient place, either in Pandanus trees or adjacent shrubs, or among the stronger of the grass stems.

The eggs, 4 or 5 for a sitting, are small in comparison with the size of the birds; length 0·65 × 0·45 inch in breadth.

ORTHONYX TEMMINCKII, *Vig.* and *Horsf.*

O. spinicaudus, Temm.

Mr. Gould in his Handbook has already described the nest of this species, which is usually known under the name of *O. spinicaudus.* Nests obtained by my collectors in the Richmond River scrubs in 1865-6, were all placed on the ground at the base or between the "buttresses" of trees, and composed of mosses and débris of leaves, &c. Eggs white, large comparatively, 1·13 × 0 35 inch.

SITELLA TENUIROSTRIS, *Gould.*

This is a somewhat doubtful species, and Dr. Gadow, who has presumedly examined the type from Mr. Gould's collection, has made it still more doubtful by placing it as identical with *Sittella pileata*; but on reference to Mr. Gould's Handbook, Vol. I. p. 610. it will be seen that that author considered the bird a variety of *S. chrysoptera.*

As I have specimens agreeing very well with Mr. Gould's description, from the interior provinces, obtained by Mr. James Ramsay, I prefer to consider it more nearly allied to *S. chrysoptera* than to any other. The length of the bill is 0·7 inch. The nest is a very beautiful structure placed between the upright forks of often a dead branch; it is very deep, open above, the edges sharp not rounded, and composed of fine shreds of bark, lichens and cobweb, the outside felted or "shingled" with small scales of bark fastened on with cobwebs, and made to so resemble the sides of the forked branch between which it is placed, as to be most difficult of detection; the interior is usually lined with "mouse-eared" lichen, and the colour of the eggs closely resembles that of the lichen itself. The eggs are 3, seldom 4 in number, of a delicate greenish white, with dots and confluent irregular markings of slaty-lilac, and slate-black, the lilac freckles appearing beneath the shell; in some forming a zone of larger spots near the thicker end, in others the spots are nearly evenly dispersed over the whole surface. Length (A) 0·63 × 0·55; (B) 0·68 × 0·55; (C) 0·66 × 0·53; (D) 0·62 × 0 52 inch.

CLIMACTERIS ERYTHROPS, *Gould.*

I am indebted to Mr. K. H. Bennett, of Mossgiel, for a fine set of the eggs of this species, the first I had seen; they closely resemble some of the varieties of those of *Ptenœdus rufescens*, but have a climacterine look about them, and a smooth shell. The ground-colour, apparently white, is obscured with evenly dispersed dots and freckles of a rich red, which, occasionally confluent, form elongated spots here and there; some have a zone formed by confluent spots of red intermixed with slate or lilac-brown, and here the spots are largest, and the lilac marks appear beneath the shell. The following are the measurements of a set—(A) 0·83 × 0·65 inch ; (B) 0·85 × 0·63 inch ; (C) 0·82 × 0·63 inch.

While about it, I may as well make some remarks on *Climacteris leucophæa*, Lath., *Climacteris scandens*, Temm., and *Climacteris pyrrhonota*, Gould.

Recently on consulting the British Museum Catalogue of Birds, Vol. VIII., I was greatly surprised to find the female of *C. leucophæa* described as that of *C. scandens*, and *vice-versa ;* how such a mistake crept in it is hard to imagine. I should also like to ask the learned author of this volume how " *Glyciphila ocularis*, Gould, P.Z.S., 1837, p. 154," becomes a synonym of *C. leucophæa.* (See Cat. Bds., p. 336, Vol. VIII.)

Moreover under *C. scandens* (p. 337) the female of *C. leucophæa* is described. The sexes of *C. scandens* differ in plumage only in the *markings on the chest*, and in this respect they resemble *C. melanura*, Gould, *C. erythrops*, Gould, *C. melanota*, Gould, and *C. rufa*, Gould. But *C. leucophæa* and *C. pyrrhonota* belong to another section of the genus. *C. pyrrhonota* the first specimen of which I shot and skinned at Springfield, near Goulburn, in January, 1865, is closely allied, *if not identical* with *C. leucophæa* ; it has nothing to do with, nor does it in any way resemble *C. scandens*. For the present I shall say no more as it is my intention to revise the synonymy of this genus hereafter.

PTILOTIS NOTATA, *Gould.*

The eggs of this species are very similar to those of the other members of the genus, being of a pinkish white ground-colour, with rich dark spots on the thicker end, some confluent, forming blotches larger than usual. They come nearest to those of *Ptilotis auricomis*, and measure (A) 0·9 × 0·65 inch ; (B) 0·91 inch × 0·64 inch. Taken by Mr. Boyer-Bower near Cairns, Q.

MYZOMELA NIGRA, *Gould.*

The nest is a shallow cup-shaped structure of fine shreds of bark or similar material, usually placed over a horizontal fork of a branch. Mr. K. H. Bennett informs me that some years ago this species was found plentifully near Mossgiel feeding in the Sandalwood trees, (*Myoporum platycarpum*).

Eggs two for a sitting; they are of a dull white or cream-white with an indistinct zone, which in some consists of distinct dots of dull brown near the thicker end, in others clouded markings of light brown. Length (A) 0·6 inch × 0·47 inch; (B) 0·63 inch × 0·48 inch.

PTILOPUS SUPERBUS, *Temm.*

The egg of this fruit-dove is remarkably small, in comparison with eggs of other pigeons of a similar size. I have received a specimen taken by Mr. Boyer-Bower in the brushes near Cairns, Queensland, and although I may have previously described the egg of this species taken out of Australia, I think it not out of place to give a description of a truly authentic Australian specimen. Eggs white, oval, rather elongated and pointed, 1·2 × 0·83 inch; two only are laid for one sitting.

ANAS GIBBERIFRONS, *Müll.*

There has been much discussion about this species which had always been looked upon in Australia until the last few years, as the female of *A. castanea* (*A. punctata*, of Gould's Bds. Aust.)

I have not been able to find any good characteristics between the females of these species up to the present time. But the males may at once be known, as in *A. gibberifrons*, the sexes are alike in plumage; in *A. castanea* the male has a rich chesnut-red breast and a glossy green head when adult, and even in the young male the chest is tinged with rufous. The eggs are usually 6 to 10 in number, and are laid in the hollow branches of trees, &c. Creamy white. Length 2·15 × 1·45 inches. The eggs of *A. castanea*, Eyton, are similar in size and colour.

ANAS SUPERCILOSA, *Gmel.*

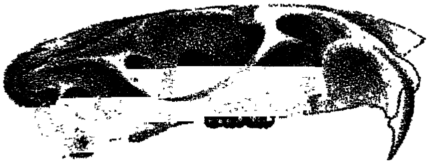
The eggs of this species vary in number from 6 to 10 for a sitting. The nest is often placed at some distance from the water among herbage on the ground, which hides the bird from view when sitting. Often a small "run" through the long grass and herbs leads to the nest itself. A great variety of situations is chosen for the nest, and the eggs are always covered over with down and feathers of the parent bird when she leaves the nest. The colour is a pale cream tint, sometimes with a greenish shade. One egg I have seen has a round green spot, but this must be looked upon as quite accidental. Average length 2·2 by 1·9 inches in breadth. (*Note-book*, 1880-1, *p.* 4.)

EXPLANATION OF PLATE XIX.

EGGS OF AUSTRALIAN BIRDS.

Fig. 1.—Egg of *Chlamydodera maculata.*
Fig. 2.— ,, *Ptilonorhynchus violaceus.*
Fig. 3.— ,, *Pachycephala gutturalis,* showing a double band of spots caused by retention in the oviduct.
Fig. 4.— ,, *Sericulus melinus.*
Fig. 5.— ,, *Pachycephala gilberti.*
Fig. 6 — ,, *Ailurœdus crassirostris.*

1



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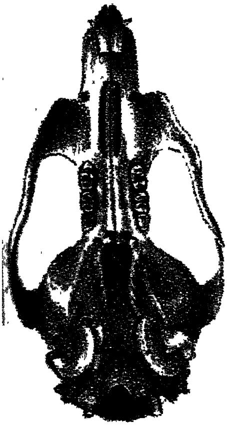

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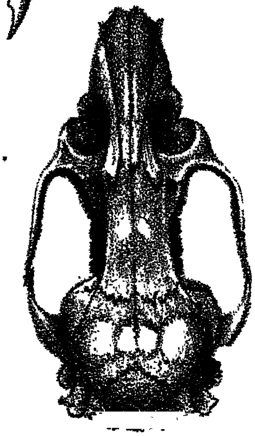

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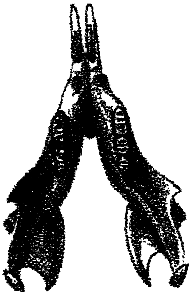

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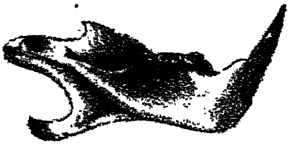

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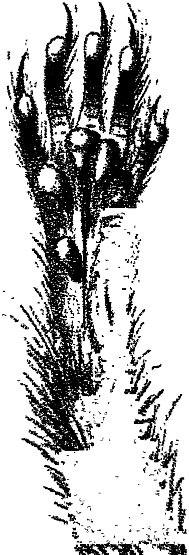

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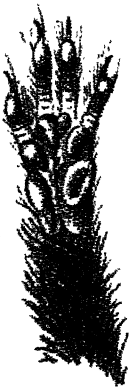

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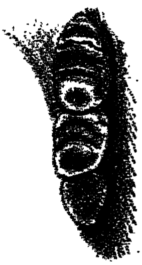

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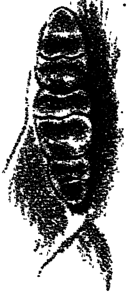

G. H. Barrow, del et lith.

DESCRIPTION OF A NEW SPECIES OF *HAPALOTIS*, *(H. BOWERI)* FROM NORTH WEST AUSTRALIA.

By Dr. E. Pierson Ramsay, F.R.S.E., &c.

Hapalotis Boweri, *sp. nov.*

Plate XVIII.

Adult male.—The hair appears to be of one kind only, and is of a light grey pencilled with longer black hairs on the upper surface of the body and limbs; from slightly in front of the ears, down the back of the head, and central portion of the back, is a broad, distinct, but irregular band of golden brown, rufescent on the nape, and on the base of the tail for about an inch from its root; from thence for about one-sixth of its length, the tail is blackish. For the remainder of its length the tail is quite white—almost bare in the central portion, but with the hairs becoming longer, until it ends in a well-defined brush of long white hairs; the scaly rings are visible for about three-fourths of the whole length, the upper and under surface of the hands and feet, and the whole of the under surface of the body is white. Whiskers black, their tips extending to the shoulders; a narrow black ring round the eye. Ears brown, almost naked, the tips rounded. Total length to root of tail, 11 inches; tail to end of vertebræ, 12 inches; extent of reddish-brown mark at the root of tail, 1 inch; of the black patch following, 2 inches; the brush of hair at the end of the tail extends 1 inch beyond the last vertebra. Distance from snout to eye, 1·2 inches; distance from snout to base of the ear, 2·2 inches; the ear in length along the back portion, 1 inch; width across base in front, 0·5 inch; hind foot, 2·1 inches; fore foot, 1 inch.

I regret to find that the skull has been removed in preparing the skin, but the dentition is doubtless the same as in the other members of the genus; outwardly, this species is a typical *Hapalotis.* (1)

This well-marked species comes nearest to *H. apicalis* of Gould, but is larger and differs considerably in its markings. In the small ears and rusty hue down the back, it approaches *H. hemileucura* of the same author, but in colour and markings it is otherwise quite distinct from these and all other previously described species.

I have dedicated this very distinct species to my lamented friend and fellow-worker, the late T. H. Boyer-Bower, Esq., who has so recently lost his life in exploring the unknown coast district of North Western Australia, and who had forwarded to me the type specimen in one of his last consignments.

EXPLANATION OF PLATE XVIII.

HAPALOTIS BOWERI, Ramsay.

Fig. 1.—Side view of skull.
Fig. 2.—Palate, &c.
Fig. 3.—Skull from above.
Fig. 4.—Ramus.
Fig. 5.—Side view of same.
Fig. 6.—Under surface of hindfoot.
Fig. 7.—Under surface of forefoot.
Fig. 8.—Teeth of upper jaw (enlarged).
Fig. 9.—Teeth of lower jaw (enlarged).

All figures (except 8 and 9) of natural size.

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(1) Since the above was written I have received another specimen from Mr. Cairn's collection made in the same district; the skull of which will be found figured of natural size in the plate, together with the hand and foot.

NOTES ON THE BOWER-BIRDS (*FAM. SCENOPIDÆ*) OF AUSTRALIA.

BY A. J. NORTH.

This beautiful and interesting section of the *Paradiseidæ* claims special attention at the hands of Australian Naturalists. The nidification and eggs of five species are now known, but these descriptions being distributed over various publications, I thought perhaps a few notes I have put together on the subject, would be of interest to some of my fellow-workers in Australian Oology. Having had access to the Dobroyde and other collections, I am enabled to give descriptions of thoroughly authentic specimens.

PTILONORHYNCHUS VIOLACEUS, *Vieill.*

The range of this species extends over the whole of the east and south coasts of Australia, from Rockingham Bay in the north to the Port Phillip and Otway districts in the south. The favourite localities or parts where this species is most plentiful, are the scrubs or thickets of the mountain ranges, where wild fruits abound; but it also visits the gardens of the settlers and feeds on almost any kind of fruit.

In 1878 I first met with them breeding in the ranges of South Gippsland, particularly on the Strzelecki, and in the neighbourhood of the Tarwin River, where I obtained both nests and bowers. The first nest I found was built in a musk tree (*Olearia argophylla*) about six feet from the ground, and resembled that of *Cracticus destructor*. The eggs are usually two in number for a sitting.

Eggs in my own collection from Gippsland vary slightly from those in the Dobroyde collection from the Illawarra district, being more swollen and heavily marked. The latter were described in the Proceedings of the Zoological Society of London, amongst those of other birds. (P. Z. S., 1875, p. 112).

The Gippsland specimens appear much stronger in the texture of the shell than any of the New South Wales examples I have met with, and are of a rich cream colour, with irregular dashes and markings of a dark umber, some of them being superimposed, and a few are of a pale lilac tint; the remainder of the surface is thickly covered with minute dots and freckles of light brown, together with several hair lines of the same colour, particularly towards the larger end. Length, 1·71 inch × 1·1 inch.

AILURŒDUS CRASSIROSTRIS, *Payk.*

A. Smithii, *Vig. & Horsf.*; *Gould, Handbook,* Vol. I. p. 446.

Hab.—East coast of Australia, extending from Moreton Bay in the north, to Cape Howe in the south. This species is common on all the ranges near the coast in New South Wales, but up to the present the nest is known only from one taken by Mr. Ralph Hargrave at Stanwell, near Wollongong, in the Illawarra District.

Both nest and eggs were described by Dr. Ramsay in the Proceedings of the Linnean Society of New South Wales, 1878, Vol. II. p. 107.

To-day I had the pleasure of examining this set of eggs, and the most striking characteristic about them is their unusually small dimensions, for the size of the bird.

Although approaching closely to *P. violaceus* in its habits, neither this nor the following species is as yet known to make a bower.

AILURŒDUS MACULOSUS, *Ramsay.*

This is a smaller species than the preceding, and, as far as is known at present, is confined to the coast ranges between the

Herbert River and Cooktown. In the vicinity of Rockingham Bay it is not rare, but nothing is at present recorded of its economy or nidification. In habits it is stated to closely resemble the New South Wales species.

CHLAMYDODERA NUCHALIS, *Jard. & Selb.*

This is the largest representative of this genus, and is found in Northern and North Western Australia. A fine specimen of the elegantly formed bower, together with the birds, may be seen in the National Museum of Melbourne. Its nest and eggs are still desiderata, but when found will undoubtedly approach those of *C. maculata.* It is strange that neither of the large collections made recently by Mr. Cairns and Mr. Boyer-Bower in North Western Australia, contain any representatives of the genus (1).

CHLAMYDODERA ORIENTALIS, *Gould.*

Chlamydodera nuchalis, *Ramsay (nec. Jard. & Selb.)* Ibis, 1865, p. 85.

The first recorded specimens of this species were obtained about twenty miles inland from Port Denison, and were distributed among Museums under the name of *C. nuchalis.* (See Ibis, 1865, p. 85).

This is the eastern representative of *C. nuchalis,* from which it differs very slightly.

Nothing is recorded of its nidification.

CHLAMYDODERA MACULATA, *Gould.*

Our knowledge of the range of this species has recently been extended to Cape York; previously Rockingham Bay was considered its northern limit on the coast, and the Murray district in

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(1) Since this was in print, Mr. Boyer-Bower's last consignment has come to hand, and contains two specimens, both females.—E.P.R.

Victoria and South Australia, its most southern range. The interior provinces are the stronghold of this species, where it is found plentifully dispersed all over the Lachlan and Darling River districts. It occurs inland about 80 miles west from Rockhampton on the Dawson River, and is also reported by Mr. Kendal Broadbent from Charleville, a new settlement about 125 miles west of Brisbane.

The nest is an open structure placed in a low tree, and is saucer- or bowl-shaped, composed of sticks, and lined with grass and feathers.

It is very rarely indeed that *C. maculata* is found near the coast, although on one occasion Dr. Ramsay procured an egg on Ash Island, near Hexham, on the Hunter River, about 10 miles from the sea coast. This was in 1861, and probably the first time that the egg had been found, although this fact appears to have escaped the Doctor's memory, since he described another egg of the same species 13 years afterwards (*P. Z. S.*, 1874, p. 605), when Mr. J. B. White was credited with having obtained the first specimen.

I give Dr. Ramsay's description, which is that of the typical egg, and of the most usual variety found.

"In form elongate, tapering; shell thin and delicate, somewhat shining and smooth. Ground-colour of a delicate greenish-white tint, surrounded with narrow, wavy, twisted, irregular, thread-like lines of brown, dark umber, light umber-brown, and a few blackish brown, which cross and recross each other, forming an irregular network round the centre and thicker end; towards the thinner end they are not so closely interwoven, and light brown lines appear as if beneath the surface of the shell, also a few black irregular shaped linear markings, much broader than the rest, show conspicuously against the pale greenish-white ground; and here and there, over the whole surface, are scattered ill-shapen figures resembling twos, threes, and fives (2, 3, 5) of various tints of colour. Length, 1·5 inch; breadth, 1 inch."

In 1875, Mr. James Ramsay obtained several specimens of both birds and eggs at Tyndarie; and others were received from the Clarence River District. Since then the eggs have become less rare, and are to be found in most collections formed in the interior. The eggs of *C. maculata* vary considerably in the extent of their markings, and sometimes in the tints of colouring; one I have from the Dawson River District is slightly smaller than usual, and has the ground-colour a faint greenish-grey covered *all over* with a fine network of light brownish linear markings closer together near the thicker end; others have their markings confined altogether to the larger end of the egg.

The bower is a beautiful arched structure of twigs and grass, placed on end on the ground, and secured by a platform of sticks, which, as well as the inside, is highly decorated with shells and bleached bones of birds and small animals, &c. This latter propensity has gained for this species in some parts of the interior the name of the "Sepulchre Bird"; in other parts it is known as the "Pink Pole".

CHLAMYDODERA GUTTATA, *Gould.*

As far as I know I have never yet seen this somewhat doubtful species, but Dr. Ramsay, while recently in London, availed himself of the opportunity of examining the type, and after comparing his notes with a large series received from all parts of Australia, he does not consider the slight differences exhibited in *C. guttata,* sufficient to warrant its being separated from *C. maculata*. It will be necessary therefore to receive a complete series from North Western Australia, where the type was obtained, before their points of distinction can be finally determined.

CHLAMYDODERA CERVINIVENTRIS, *Gould.*

This species is found at Cape York, the Islands of Torres Straits, and in the southern portions of New Guinea. This is the only known species of the genus that has not the handsome rose-coloured frill on the nape of the neck. Its bower is larger than that of any of the foregoing, and has the sides nearly parallel with one another, with a very slight curvature at the top. It is not so highly ornamented as the bowers of other members of this genus.

The nest is an open one, cup-shaped, and built near the ground; it is composed of twigs, pieces of bark, and moss, and is lined inside with grass, &c. The egg is very like that of *C. maculata,* with the same peculiar linear markings crossing and recrossing each other all round; it is slightly larger and in form more swollen. Dr. Ramsay informs me that an egg of this species said to have been taken by one of Mr. Goldie's party while exploring in New Guinea, found its way to London, where it was sold at a great price as that of *Paradisea raggiana,* which it in no way resembles.

SERICULUS MELINUS, *Lath.*

Plate XIX., fig. 4.

This, perhaps, the most beautiful of all the Bower-builders, and one of the earliest known species, was described by Latham in 1801, under the name of *Turdus melinus;* since that date, however, it has been redescribed many times and under various names, of which that given to it by Swainson, *S. chrysocephalus* appears the most appropriate, if not the oldest. Dr. Ramsay discovered the bower of this species in 1860, on Ash Island, and the nest in 1875 in the dense scrubs of the Richmond River district.

The nest was an open one resembling that of a *Collyriocincla* in size and structure; it was built in a cluster of "lawyer vines," *Calamus australis.*

The bower is a poor one compared with those of the *Chlamydoderæ*, but otherwise is not unlike that of *Ptilonorhynchus violaceus,* though smaller and more loosely put together.

The egg is a long oval, slightly swollen at one end, the ground-colour being of a pale lavender; upon the larger end and beneath the surface of the shell is a zone of nearly round and oval-shaped spots of a uniform pale lilac colour, which in some places are confluent; on the outer surface all over the larger end, to the lower edge of the zone, are irregularly shaped, but well-defined linear markings of sienna, assuming strange shapes; two prominent markings being a double loop, and a scroll, others less conspicuous are in the shape of the letter Z and the figure 6, while several of the markings stand at right angles to one another; from the lower edge of the zone and dispersed over the rest of the surface, are a few bold dashes of the same colour, several lines being straight, but marked obliquely across the egg, others are like the letter V with one side lengthened at a right angle, and the figure 7, while upon the lower apex is a single mark in the shape of the letter M. The pecularity of the markings of this egg are, that the spots appear to be on the *under* surface, and the linear markings on the *outer* surface of the shell.

Length 1·35 inch × ·09 in breadth.

SCENOPŒUS DENTIROSTRIS, *Ramsay*.

This remarkable bird is quite unlike any other genus of the family, and is found only in the dense brushes of the Bellenden Ker Range, situated on the North-east Coast of Queensland; its range does not extend further north than the scrubs near Cooktown, nor has it been found further south than the Herbert River. As far as at present known this species does not build a bower, but in lieu thereof clears a space in the scrub about 10 feet in diameter, and ornaments it with little heaps of bright berries, and gaily coloured leaves and flowers &c. An interesting account of the habits of this species will be found in the Proceedings of the Zoological Society of London, 1875, p. 591. Nothing is known of its nidification at present.

LIST OF REFERENCES TO AUTHENTIC DESCRIPTIONS OF AUSTRALIAN BIRDS' EGGS.

BY A. J. NORTH.

Having received at various times, many inquiries as to where authentic descriptions of Australian Birds' Eggs may be found, I beg to lay before the Society this List of References, hoping that it may prove useful, to those members, who like myself take an interest in Australian Oology. I may say that these references refer to descriptions published chiefly since the issue of Gould's 'Hand-book to the Birds of Australia,' and that this List will be augmented from time to time as descriptions of authentic specimens come under my notice.

ASTUR APPROXIMANS, Vig. and Horsf. ;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1141 (1886).

ASTUR RADIATUS, Lath.;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1141 (1886).

ACCIPITER CIRRHOCEPHALUS, Vieill. ;—*P.L.S., N.S.W., Vol. VII. p.* 53. *Read* Jan. 1882.

AQUILA AUDAX, Lath. ;—*Ibis*, 1863, *Vol. V. p.* 446.

AQUILA MORPHNOIDES, Gould ;—*P.L.S., N.S.W., Vol. VII. p.* 412. *Read Oct.* 1882.

ALCYONE AZUREA, Lath. ;—*Ibis*, 1866, *Vol. II. New Series, p.* 327.

ARTAMUS MINOR, Vieill. ;—*P.L.S., N.S.W., Vol. VII. p.* 407. *Read Oct.* 1882.

AMYTIS STRIATUS, Gould ;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1143 (1886).

ACANTHIZA PUSILLA, Lath. ;—*P.Z.S.* 1866, p. 574.

ACANTHIZA NANA, Vig. and Horsf. ;—*P.Z.S.*, 1866, *p.* 573.

ACANTHIZA LINEATA, Gould ;—*P.Z.S.*, 1866, *p.* 571. *Pl. of nest*, *p.* 572.

AMADINA MODESTA, Gould ;—*P.L.S.*, *N.S.W.*, 2*nd Ser. Vol. I.* *p.* 1147 (1886).

AILURŒDUS SMITHII, Vig. and Horsf. ;—*P.L.S.*, *N.S.W.*, *Vol. II.* *p.* 107. *Read June* 1877.

ÆGIALITIS MONACHUS, Geoff. ;—*P.L.S.*, *N.S.W.*, *Vol. VII. p.* 57. *Read Jan.* 1882.

ÆGIALITIS NIGRIFRONS, Cuv. ;—*P.Z.S.*, 1877, *p.* 336.

ÆGIALITIS RUFICAPILLUS, Temm ;—*P.Z.S.*, 1877, *p.* 337.

ARDEA NOVÆ-HOLLANDIÆ, Lath. ;—*P.Z.S.*, 1877, *p.* 341.

ANAS SUPERCILIOSA, Gmel. ;—*P.L.S.*, *N.S.W.*, 2*nd Ser. Vol. I.* *p.* 1152 (1886).

ANAS GIBBERIFRONS, Mull. ; } *P.L.S.*, *N.S.W.*, 2*nd Ser. Vol. I.*
ANAS CASTANEA, Eyton ; } *p.* 1151 (1886).

BAZA SUBCRISTATA, Gould ;—*P.Z.S.*, 1867, *p.* 392.

BOTAURUS POICILOPTILUS, Wagl. ;—*P.L.S.*, *N.S.W.*, *Vol. VII. p.* 55 *Read Jan.* 1882.

BUTOROIDES FLAVICOLLIS, Lath. ;—*P.L.S.*, *N.S.W.*, *Vol. VII. p.* 55. *Read Jan.* 1882.

BUTOROIDES MACRORHYNCHA, Gould ;—*P.L.S.*, *N.S.W.*, *Vol. VII.* *p.* 56. *Read Jan.* 1882.

BIZIURA LOBATA, Shaw ;—*Ibis*, 1867, *Vol. III. New Series*, *p.* 413, *pl. VIII. fig.* 1.

CAPRIMULGUS MACRURUS, Horsf. ;—*P.Z.S.*, 1875, *p.* 581.

CHELIDON ARIEL, Gould ;—*Ibis*, 1865, *Vol. I. New Series*, *p.* 299.

COLLYRIOCINCLA PARVULA, Gould ;—*P.Z.S.*, 1875, *p.* 585.

CISTICOLA EXILIS, Lath. ;—*Ibis*, 1866, *Vol II. New Series*, *p.* 328.

Cisticola ruficeps, Gould ;—*Ibis*, 1868, *Vol. IV. New Series*, *p.* 277.

CHTHONICOLA MINIMA, Gould ;—*P.Z.S.*, 1869, *p.* 359, *pl. XXVII. fig.* 2.

CINCLORAMPHUS CANTILLANS, Gould ;—*Ibis*, 1866, *Vol. II. N. S. p.* 328.

CHLAMYDODERA MACULATA, Gould ;—*P.Z.S.*, 1874, *p.* 605.

CHLAMYDODERA CERVINIVENTRIS, Gould ;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1160 (1886).

CORVUS CORONOIDES, Vig. & Horsf. ;—*Ibis*, 1865, *Vol. I. New Series*, *p.* 303.

CALORNIS METALLICA, Temm. ;—*P.Z.S.*, 1875, *p.* 594.

CLIMACTERIS ERYTHROPS, Gould ;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1149 (1886).

CLIMACTERIS MELANURA, Gould ;—*P.L.S., N.S.W., 2nd Ser. Vol. I. p.* 1093 (1886).

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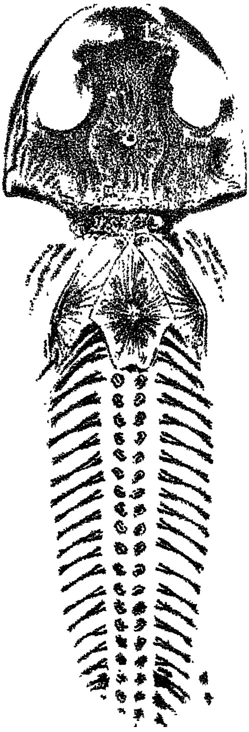

PLATYCEPS WILKINSONII.

A Labyrinthodont Fossil, from Gosford.

Brisbane Water, Broken Bay,

N. S. W.

W J S del.
Dec 1887.

ON SOME ADDITIONAL LABYRINTHODONT FOSSILS FROM THE HAWKESBURY SANDSTONES OF NEW SOUTH WALES.

(*PLATYCEPS WILKINSONII*, AND TWO UNNAMED SPECIMENS.)

BY PROFESSOR STEPHENS, M.A., F.G.S.

(Plate XXII.)

In a previous paper (read Sept. 29), on a Labyrinthodont fossil from Biloela (p. 931 of this volume), some expression was given of an expectation that more remains of the same character would be forthcoming before very long. But the writer was nevertheless rather astonished to learn (Nov. 30), from Mr. C. S. Wilkinson, Government Geologist of N.S.W., that a 'Baby Labyrinthodont' had just been met with in a cutting on the Northern Railway, and to have his anticipations so suddenly realized. Besides this fossil there have turned up, among the collections of the Geological Survey Department, two others, one, an unmistakable fragment of the jaw of a large Labyrinthodont, with teeth so much weathered away as to display their internal structure; the other, a portion of a smaller individual, showing the proximal portions of some 8 or 9 ribs, together with the vertebræ to which they belonged, and with considerable remains of integumentary structures, which seemed to the writer to indicate that it also belonged to the Labyrinthodont type. Of this more anon. Confining our attention in the first instance to the 'Baby Labyrinthodont,' it is worth while to state, for the information of collectors, and as helping to determine the exact horizon of the deposit, that this extremely interesting fragment was discovered during the excavations upon the railway now in process of construction between the Great Northern and Sydney, at a point near Gosford, a well-known village on Brisbane Water, the northern arm of Broken Bay. Together with it were found large numbers of *Cleithrolepis*, *Palæoniscus*, and many other ganoids as yet undetermined.

The Matrix of these specimens is a light grey micaceous shale, belonging to one of those beds of similar character which are frequently intercalated in the Upper Hawkesbury rocks. This particular piece contains fragmentary plant impressions, of ferns and *Phyllotheca*, a nearly perfect specimen of *Cleithrolepis*, the body and tail of a *Palæoniscus* (both of them species well-known as belonging to the Wianamatta formation in N.S.W.), and above all the interesting stranger now for the first time introduced to our acquaintance. This fossil exhibits, as I shall afterwards point out in detail, the head, the shape of which may be compared to that of *Platycephalus*, the throat- or thoracic- plates, and the vertebræ and ribs of the trunk. The tail is broken off by the unfortunate fracture of the stone.

The Head has the upper surface exposed, and is parabolic in outline, rather squarely convex to the rear, displaying large oval orbits, a parietal foramen, and (probably) one nostril; it is covered with bony plates, which are obscurely sculptured in very faint relief.

The Thoracic plates are whitish or chalky in appearance, owing to the presence of calcite in their radiating furrows. They look as if they belonged to the upper and not to the lower surface of the animal. But they correspond so exactly with all that is recorded as to the Thoracic plates of the Labyrinthodonts (Miall, Report Brit. Ass. 1873, p. 241; Owen, Palæontology, p. 179; Lydekker, Palæontologia Indica, Ser. IV. Vol. I. &c., &c.) that one must regard them as belonging to the ventral face, for on close examination it may be seen clearly that the medial shield overlaps the inward margins of the laterals; whereas, as seen from the outside, "it is overlapped by the lateral plates to a considerable extent, especially upon the antero-external borders; and frequently only the hinder part is exposed," (Miall, l.c.) and "the outer surface is sculptured by radiating furrows, except at so much of the marginal part as is overlapped by the lateral pieces." (Owen, l.c. p. 179). This fact of course shows that we have the upper or inner face of these structures exposed, and that their external or downward aspect is hidden. It follows then that, while we have the upper surface of the Head preserved, the anterior part of the vertebral column, and the whole upper surface of the body have been more or less engaged in the counterpart stone, which is lost; that we see in our specimen the interior surface of the Thoracic plates displayed by the removal of the upper part of the body; and have a view, from above, of all the vertebræ and ribs, except some few of the anterior joints, as far as, and including, the indications of a pelvis or equivalent support for a weak hinder limb. The Amphibian, therefore, lies flat upon its belly, while the fishes which are associated with it on the slab are naturally laid flat upon their sides.

Before proceeding further it must be clearly understood that the greater part of the details which I am about to describe cannot be made out by a hurried observation, nor even by the most careful examination if made on one single occasion. The varying illumination which we receive under various conditions of the atmosphere is found, in such almost obliterated inscriptions, to bring out from time to time particulars of form, relief, sculpture, and colour which otherwise, as under a perfectly clear sky and in bright sunlight, remain invisible. Points and lines which become clearly distinguishable, if not distinct, at one moment, seem to vanish as suddenly as they appear, and one may look in vain to-day for forms which yesterday might be measured and drawn without difficulty. It follows that the figure which accompanies this paper is fairly entitled to an amount of consideration which one would not presume to claim under circumstances of a less perplexing character, and that it should be judged not upon a single comparison with the original, but after a long series of examinations on different days, and at different hours. It is not probable that many persons will take this trouble. Nor indeed is it necessary. If these drawings are correct, or so far as they are correct, they will be supported by the evidence of the future, since we may fairly expect that many additional specimens of Labyrinthodonts will be in our hands before long.

The Head, which is about 27 mm. in length, by about 32 mm. in breadth at the base, is crushed flat, or even rather hollow, although the parietal, quadrato-jugal and occipital bones, and the rim of the orbit, remain in low relief. The parietal foramen, and the two orbits, are distinct enough, though the left hand anterior portion of the rim of the left hand orbit has been broken away, and a part of the opening filled by a small fragment of bone, either extruded from below, or slipped from the side. One of the nostrils, the right, may, I think, be observed near the anterior margin and medial line; the other has disappeared. The left mandible lies outside and clear of the jugal and maxillary bones. A portion of the right maxilla is also preserved, and the anterior margin of the frontal (?) is well marked, The posterior left hand angle *seems* as if it ought to have the quadrato-jugal united with the supra-temporal, and that with the postorbital and squamosal, but, as even with the utmost effort I fail to determine any sutures, I only make a conjecture to that effect. This part is sculptured with shallow traces radiating from the angle, and there is a depression or half-pit just inside the angle, as if at the angle the bone had resisted a pressure which was sufficient to break down the soft material to the right of it. This additional strength at the very angle may have been due to the articulation of the lower jaw directly below it. (1) The parietal bones are obviously marked out by the foramen, from which similar traces of shallow pits radiate in all directions, but mainly forwards and backwards. The super-occipital ends abruptly backwards, as do the other bones of the posterior margin of the head, as if their hinder portions had been in a cartilaginous condition, and had so missed complete preservation; although, indeed, in the furrow which thus abruptly terminates the occipital region, there are seen two irregular protuberances about 10 mm. apart; which I suppose to indicate the epiotic cornua in a quasi cartilaginous condition. Between them, I have once or twice thought, but hesitate to say, that one of the two condyles was to be made out, in an equally imperfect state. The appearance which suggested this may, however, be really a trace of the atlas.

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(1) Can this be referred to the 'internal articular buttress' of the Mandible?

Miall (l.c. p. 229) states—"That in Labyrinthodonts of the carboniferous the occipital region appears scarcely ever to have been ossified, and that owing to its cartilaginous character, it has left little or no record." "In the Triassic Labyrinthodonts," he continues," "the occipital region was fully ossified." But not, I presume, in individuals so young as ours.

DIMENSIONS OF HEAD.

Length (about)	27 mm.
Breadth ,,	32
Distance of orbit from base of skull	10
Least width of interorbital space	8
Length of orbit	8
Width of orbit	6·5
Distance of parietal foramen from base of skull	8
From centre of occiput to posterior end of orbit	14
From tip of snout to anterior end of orbit (about)	9

It is probable that these proportions of the skull would have been different if the animal had attained a higher degree of development. For as Miall says (l.c., p. 233.) "Like all the bones of the face not only in Labyrinthodonts but in vertebrata generally, the nasals become longer and longer relatively to the brain case as age advances. This is notably the case with long-snouted animals, such as the Crocodilia, and is most apparent in those species of Labyrinthodonts which have elongated skulls." And again, "as the parietals lengthen with age the (parietal) foramen is placed further and further back in the interparietal suture" (ib. p. 234). In this case the foramen is about 8 mm. in advance of the centre of the occiput, and about 2 mm. behind the line joining the hindmost points of the orbits.

If—as seems reasonable—we consider the relative positions of the posterior angles, the parietal foramen, and the orbits to be of a more permanent character than those which are subjected to continued and increasing differentiation with increase of age, and compare this 'triangulation' with the figures given by Miall (Rept. 1874, p. 192, Pl. IV.-VII.) we shall discard, as being in these respects remote from our example, the following types:—*Mastodonsaurus*, *Trematosaurus*, *Metopias*, *Brachyops*, *Rhinosaurus*, *Loxomma*, *Batrachiderpeton*, *Pteroplax*, *Keraterpeton*, and retain *Capitosaurus*, and even the very elongate *Archegosaurus*, as more nearly related. *Capitosaurus*, it will be remembered, is the genus to which the Biloela fossil seems referable. (*Archegosaurus*, besides its Permian character, can hardly have had its cranial region, even in its youngest forms, and considered apart from its facial bones, so broad and squat as this before us). On the other hand, indeed, if we follow the Tabular View (Miall. l.c. p. 149) it will be placed in Section II., BRACHYOPINA, along with *Brachyops*, *Bothriceps*, *Micropholis*, and *Rhinosaurus*. Yet, referring to the Analysis of Characters (ib. p. 174) we find the following notes of the mature *Capitosaurus* combined in this immature example, viz.: —Skull broad; orbit oval, large, (1) posterior; interorbital space greater than transverse diameter of orbits; mandible with internal articular buttress (?); thoracic plates externally sculptured, lateral plate with reflected process (?).

These considerations lead us to search among the genera most nearly approaching to *Capitosaurus* for the adult form of which our fossil is an immature representative. It is very possible that this particular form may be as yet undescribed. But *Bothriceps* (described by Huxley, Q. J. G. S. XV. p. 647) is Australian, though its particular locality is not known, and therefore has a certain claim upon our consideration. There is only one species known, *B. australis*, and this seems to differ in some important points from our fossil. For the snout is more pointed (or the head more triangular), the greatest width is more in advance, the parietal foramen is much further behind the orbits, and the anterior suture of the frontals far more forward than its *apparent* position in our specimen. The sculpture of the head, from which the name is derived, is in the form of detached and promiscuously scattered pits, whereas in ours it shows traces of regular and radiate arrangement. Moreover, if we denote the greatest breadth of the head by the co-efficient 100, since that dimension may probably have more stable relations to the distances of the orbits and foramen from one another and the occiput, we obtain the following table of comparison :—

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(1) Ambiguous character. The orbit is *large* in proportion to length of skull, which is a variable.

	Bothriceps Australis.	*Platyceps Wilkinsonii.*
Greatest breadth........................	100	100
From centre of occiput to posterior end of orbit	115	43
Length of orbit........................	61	25
Width	46	20
Least width of interorbital space......	34	25

The relative distances of the 'foramen' from the orbits I have not calculated, but judged from the eye. As I cannot refer this fossil to any previously described genus, I am induced to give it, provisionally, and only for the sake of convenience, a name of its own, although it savours somewhat of rashness to found a genus upon a specimen in so low a stage of development. I propose, therefore, to call it *Platyceps Wilkinsonii*, the specific name being given in honour of our respected Vice-President, Mr. C. S. Wilkinson, F.G.S., &c., by whose kindness I have been enabled to submit the specimen to a prolonged examination.

[Lydekker, however, in his description and figures of the Bijori Labyrinthodont, *Gondwanosaurus Bijoriensis* (Pal. Ind. Ser. IV., Vol. 1, pt. 4.) touches on so many points which are, to say the least, illustrative of this specimen, that I am induced, *secundis curis*, to give a brief account of his statements and conclusions, as they fall in with the course of this paper. The head of *Gondwanosaurus* then, to begin with, is elongate, being about half as long again as broad. But the value of this character depends so much on the age of the individual, that it becomes of minor importance in a comparison between individuals of different ages. The relative position of the orbits, parietal foramen, and quadrato-jugal angles corresponds well enough, especially if we admit that along with the prolongation of the facial bones the articulation of the lower jaw was also gradually thrust further and further to the rear. 'The degree of backward extension of the Quadratojugal varies greatly, according to the species, and, in *Archegosaurus*, according to the age of the individual.' Miall. l.c., p. 235.]

The 'Lyra,' consisting of paired muciferous (?) canals running more or less longitudinally along the surface of the cranial bones, is rather obscure and often escapes the eye. It may however be seen upon the left squamosal, near its probable junction with the parietal, and curving slightly forwards and outwards to the posterior margin of the left orbit. I cannot make out whether it is here evanescent or whether it continues without interruption to the place where it may again be made out passing round the inner side of the orbit, and so forwards. The only sutures between cranial bones which I can see (or perhaps imagine) is that between the left post-orbital and quadrato-jugal bones, and that between the right frontal and pre-frontal. The frontal bones are sculptured with shallow longitudinal pits, and similar furrows run from the parietal foramen backwards as has been hinted above. There is no sign of teeth.

[In *Gondwanosaurus*, the dentary piece of the mandible bears a row of *small*, acute, and subcylindrical teeth. It also laps outward from beneath the jugal and maxilla so that the head is slightly 'underhung' in the same manner as in our specimen.]

The Vertebræ are all alike, so far as I can see. If the neural spine was ever ossified, it has been removed in the counterpart. The two small knobs, paired right and left, which represent each joint, seem to be the rudiments of the neural arches and transverse processes. They exhibit some chalky markings, and other indications of form which may be capable of interpretation by skilled observers. The centrum seems to have been only cartilaginous. At least I can see no trace of it. [In *Gondwanosaurus*, each vertebra consisted originally of a bony neural arch, from which a bony plate descended on each side, and joined a median ventral portion. The intervening inferior portions of the column being represented by unossified remains of the notochord.] The Vertebræ number sixteen (16) from the posterior termination of the medial plate, to the indication of a pelvis. There is no appearance of a sacrum. It appears as if the number of vertebræ in advance of the posterior end of the throat plate was eight (8), and these, together with their appendages, seem to have been in the process of fossilisation crushed down into, and amalgamated with, the thoracic plates which lie beneath them. For it can hardly be questioned, as shown above, that we have the inner or upper surface of these plates exposed, that is, that the spinal column lies between them and our eyes, and that consequently any portions of the spine which may, from whatever cause, appear to be beneath this inner or upper face are nevertheless in reality above it, although perhaps sunk into or through the surface. Some such portions of these anterior vertebræ, similar in every respect to those behind them, are quite distinctly visible, and appear, the ribs especially, as if they lay in an impossible situation beneath them. I can only suggest, as a possible explanation of this contradiction, that the process of mineralization, by which calcite has been deposited in the radiations of the plates, has also effected a similar deposition in the slight and scarcely solid bones which were pressed down upon them.

[On second thoughts I am led to the conclusion that the ribs and vertebræ, which seem to stand out in low relief upon the surface of the plates, and nevertheless to be crossed by the white lines of calcite as if they were seen through their substance, are in reality impressions in relief from Moulds in intaglio formed by the shrinking or flattening of very imperfectly ossified bones or cartilages; and that thus these reliefs are casts, or squeezes, in the soft and thin but horny material of the plates, these being pressed upwards into the aforesaid Moulds.]

Ribs are attached to all the vertebræ, including those two which the specimen retains behind the pelvis, or its indication. I can best describe them by quoting direct from the Report often cited above (Brit. Ass. 1873, p. 240.) "As to form they are usually compressed (transversely to the axis of the trunk) at either end, but are nearly cylindrical in the centre of the shaft. They are short, relatively to the probable dimensions of the thorax and strongly curved. A capitulum and tuberculum are present in all well preserved examples. Both articular surfaces are slightly concave and adjacent, and appear to have articulated with the vertebral transverse process; a notch or groove commonly separates them, and is usually continued for some distance along the shaft of the rib." Except for the 'strong curvature' of the ribs, (1) the above description will be seen to correspond with singular closeness to the specimen before us, if we take into consideration the extremely immature and almost embryonic condition of its ossification in general, together with the following remarks upon *Archegosaurus* (l.c.) "Some very young examples afford evidence of cartilaginous vertebral extremities, this evidence consisting of the separation of the proximal ends of the ribs from the vertebral column by a regular interval, and the hollowing out of the ends as if in conjunction with cartilage; at this stage a transverse process may be seen to project for a short distance from the lamina of the corresponding superior arch." Though this account could hardly have been established upon our specimen, yet it is plain that the specimen follows the diagnosis with curious fidelity. The true head and tubercle of each rib, and the approaching portion of the transverse process were evidently cartilaginous and have quite disappeared.

[In *Gondwanosaurus* the ribs display the general Labyrinthodont character—expansion at the two extremities, and articulation with the transverse processes of the vertebræ by a distinct capitulum and tuberculum.]

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(1) Owen, Palæontology p. 172, describes the ribs of *Archegosaurus* as "short, almost straight, expanded and flattened at the ends, round and slender in the middle."

Just in advance of the right thoracic plate a wedge-shaped bone, perhaps belonging to the hyoid arch, is visible, but indefinite; while on both sides, and partly between the plates and the posterior angles of the head there appears a set of three or four parallel 'rows of ossicles' more or less united in continuous lines, and slightly curving forwards and inwards. These latter unquestionably represent the Branchial arches, and serve as another indication of the very early or low stage of development to which this individual had only just attained at the time of death.

The Thoracic plates, as has been already shown, are seen from above, that is to say, their inner or upper surface is exposed to view by the removal of whatever structures may have lain within or above them in life. They are extremely thin, like fish scales, and are ornamented with radiating furrows, which are whitened by a deposit of calcite; those of the laterals showing through the rays of the overlying medial as if they intersected them. One can also discern, as has been before stated, traces of the anterior vertebræ, with the ribs appertaining to them, so pressed down into, and so united with, the substance of the plates, that it seems as though the spinal column passed along their further surface. [Another and better explanation is given in a preceding note.]

Their form may be thus roughly described:—The Medial is pentagonal; the anterior half is triangular, nearly equilateral, with the apex a little rounded. The posterior half is bounded by three sides, the middle being the shortest. They are all concave or emarginate, and the angles between them are rounded. The sculpture radiates from the centre of the shield.

The shape of the Laterals is not so readily determined or described; it must suffice to say that the general shape is oval, the broad end in front, and that they converge towards the same point, not, however, quite meeting, but having the angle between them closed by the anterior apex of the overlying medial. The sculpture of the laterals radiates from their external angles, which are very obtuse, and are a little in rear of the centre of the medial.

The outer flanges of the lateral plates ("reflected process") appear to be continued backwards beyond the points from which the furrows radiate, and which may be called their centres of ossification. These prolongations seem to be distinct bones, and may perhaps be supraclavicles, as in the figure of the plates of *Gondwanosaurus*, Lydekker, Pal. Ind. Ser. IV. I. 4. At each centre of ossification is a pit, with a tubercular (?) centre, where I suppose the scapula and coracoid to have approached, if not articulated with, the thoracic plates or clavicules. The coracoid, however, is lost, like the scapula, or was perhaps only cartilaginous and has left no sign. At the outer angles of these laterals are some scattered fragments which may possibly belong to the shoulder girdle.

Their dimensions are as follows:—

MEDIAL PLATE.

Length	15 mm.
Width (about)	13
Length of each anterior margin	11
Length of each lateral margin	9
Length of the posterior margin	6

LATERAL (Left Side.)

Length from centre of radiation to anterior margin (about)	11
Greatest width (about)	6

[In *Gondwanosaurus* the thoracic plates appear to be identical, though, of course, in a much more advanced stage of development, with those of our specimen. "The central plate or interclavicle is imperfect posteriorly, having been broken off posteriorly to the central point from which the sculpture radiates; this missing portion has been restored in outline in the figure." But in our specimen the plate, though perfect, is truncate and emarginate posteriorly, and the same may have been the case with the Bijori fossil. "When complete this plate formed an unsymmetrical rhomboid, covered with a sculpture consisting of elongated pits radiating towards the periphery from a centre situated at the junction of the maximum longitudinal and transverse diameter.

The size of the pits increases regularly from this centre to the periphery. The lateral plates or clavicles are irregularly triangular in form and largely overlap the anterior portion of the interclavicle; although apparently not meeting in the median line. The external angle is the thickest portion of the lateral plate, and from this point there radiates a sculpture very similar to that of the median plate. The bone is sharply flexed at the external angle, beyond which it is produced into a slender process which is in apposition with a slender and but imperfectly preserved bone, termed by Prof. Gaudry the supra clavicle (sus-claviculaire). Fragments of other bones are seen lying in a deeper plane at the posterior border of the thoracic shield which doubtless represented other elements of the shoulder girdle, but they are too imperfectly preserved to admit of determination; although one of them may very probably correspond to the coracoid." The figures which Lydekker gives of the thoracic plates correspond exactly, except in the greater maturity of their development, and therefore in their size, excepting also the doubtful restoration of the medial, with the characters of our specimen. But in both figures (Plate 3 and 4), the *ventral* aspect is represented, showing the medial overlapped by the laterals, instead of the laterals being overlapped, as in the dorsal aspect, and in this specimen, by the medial. I may observe that in plate 4 the figure is upside down, the anterior portion being turned towards the bottom of the page.]

The sixteenth vertebra, counting from the posterior edge of the medial plate carries on the right hand side of it a bone in the position of the proper rib, and differing from the other ribs, at least at the proximal end, only in size, having the head nearly twice as broad as theirs. The shaft appears to expand towards the distal extremity, but is imperfect. Of the corresponding bone on the left side only the head is preserved.

The next vertebra is more closely approached on both sides by a pair of bones, which are very imperfect, and are smaller than the preceding pair. It is quite possible that a little clearing of the matrix might give us more information here, at least on the right hand side. But I religiously refrain from tampering with the goods of which I am only 'bailee.'

These enlarged and altered ribs appear to correspond with those observed in *Menopoma*, and, the anterior pair, with those of other Urodela, except *Proteus* and *Amphiuma*, their distal ends abutting against, and being united by ligaments with the ilia. (Encycl. Brit. s. v. Amphibia, T. H. H.). Nothing appears to be known of the structure of this pelvic girdle in any other Labyrinthodont than *Archegosaurus;* and it is interesting to observe the approximation of our subject in this respect to amphibians now in existence. It is possible that some traces of bone about the distal extremity of the first sacral rib may represent other portions of this girdle. But the supporting rays in both pairs of limbs would seem to have been entirely cartilaginous, since there is no trace of either humerus or femur, which, if at all ossified, would surely have been preserved, inasmuch as the whole animal was evidently quietly buried, and without any mutilation or decomposition. Such limbs could not have supported the creature upon land; and indeed the slightness and weakness of the pectoral and pelvic girdle tell the same story. It must therefore have been aquatic, furnished with four paddles, but probably depending mainly upon the tail for locomotion. And this perhaps larval condition corresponds with the distinct presence of branchiæ, and with its situation as a fossil, in the exact place where it, with the fishes swimming about it, was by some means or other put to sudden death, and covered up with a layer of micaceous mud.

We may conjecture that animals of this kind, in the toothless condition of their early youth, fed in part at least upon the spawn of the Fishes whose society they seem to have frequented. And the large numbers of the latter which have been found together in the Gosford cutting shows that they used to move about in shoals, a conclusion which also follows from the large numbers recently obtained by Dr. Ramsay, Curator of the Australian Museum, from brickyards near Marrickville, in which the Wianamatta Shales are quarried for the manufacture of bricks. We also see that these fishes, which are all of them Ganoids, lived in quiet lagoons with muddy bottoms, which were formed, in Triassic times as at present, by shifting of the great river courses, and which then, as now, are liable from time to time to an invasion of flood waters from the main channel. And we are, perhaps, not presuming too much on these analogies when we conjecture that such shoals of fish, thriving in the tepid waters of these lowland lagoons and anabranches, and associated with Labyrinthodonts in these habitats, may frequently have been killed in large numbers by a sudden irruption of cold, perhaps icy, waters and mud which at once destroyed and preserved them. It may be observed that the Dipnoi, *Protopterus*, *Lepidosiren* and *Ceratodus* which claim some sort of relationship to these amphibia, all belong to warm climates and tepid waters; and that the only Ganoids now existing belong either to temperate and sub-tropical regions, like *Lepidosteus*, or to tropical and sub-tropical, like *Polypterus;* facts which seem to indicate an adaptation, at least, to such conditions as those under which our Triassic rocks were formed. I suppose also that the strong head and throat-plates of the Labyrinthodonts, as well as their hard dermal scutes or indurated integument, like the ganoid scales of *Palæoniscus*, *Lepidosteus*, &c., the cuirass of *Pterichthys* and *Coccosteus*, (1) the bucklers of *Acipenser*, and the rugged mail of the Crocodiles, bear all of them a certain relation or accommodation to fluviatile habitats. These animals all live, or appear to have lived, in great rivers with strong and irregular currents, and subject to sudden inundation by freshes, in which heavy materials, such as stones and logs, might be carried along with a velocity dangerous to any organism upon which they might strike. Some protection was manifestly requisite for the welfare of aquatic animals exposed to such perils, and it was obviously desirable, in their interests, that this protection should be such that external hardness and stiffness should be accompanied by internal elasticity and toughness. and that brittleness of any structure should especially be avoided. All these conditions are united for Labyrinthodonts in the deeply corrugated or pitted plates of bone and the hard scutes or studs which lay immediately beneath the skin, which clothed it, and in the cartilaginous state of the skeleton, beyond which few of them advanced. For these characters all harmonise with the object in view. Perhaps one might even add, as a concomitant variation towards the same end, the strangely complicated structure, trussed, braced, and compensated, of the Labyrinthodont tooth.

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(1) I assume that the conditions under which the Old Red and the New Red Sandstone were deposited to have been closely analogous, if not identical in character.

The second specimen which is exhibited this evening is from Bowral, from the Wianamatta Shale. This fragment is so impregnated with iron as to make a good ore. It appears to be a portion of a maxillary bone, is about 2 inches in length, and bears the remains of five teeth much weathered and broken. They were set very close to one another, and may have been about three-quarters of an inch in length, with a diameter at the base of about ·37 inch. Their material, like that of the bone, has been mainly replaced by transparent calcite. The bone exhibits parallel ridges, and is about an inch in width.

The last specimen of the three is also from Bowral, in a dark indurated shale belonging to the Wianamatta series. It contains portions of 11 vertebræ, with the ribs of the left side. The spinal column is marked by a flattened ridge, well-defined at the edges, about 2 mm. in width, and probably representing the series of neural spines. Some obscure undulations from front to rear may indicate joints.

About the same distance to the left are seen the proximal ends of the ribs, not less than 4 mm. in width, though perhaps expanded by pressure. The ribs were hollow, and are now principally filled with calcite, a narrow streak of which is also visible along the spine. Miall on *Hylonomus* (Report 1874, p. 173) describes similar ribs, and gives a note from Owen upon them, in which it is shown that the cavity was not properly a medullary one, but was posthumous, and due to the solution of the primitive cartilaginous mould of the bone, which had remained unchanged by ossification in the living species. He concludes that these bones were originally solid, and composed, as in most amphibians, of an osseous crust enclosing cartilage. Their shape is peculiar, probably owing to distortion. The head portion is nearly a right-angled triangle, with the perpendicular 4 mm. in length parallel to the spine, the base, about 5 mm., curving gradually to the rear, and the hypotenuse, about 7 mm., bending towards it at an angle of about 40.° The shafts then bend backward, so as to become more or less parallel with the spine, for about 17 mm., and are consequently in close juxtaposition. They then bend outward, about 10 mm., and so disappear.

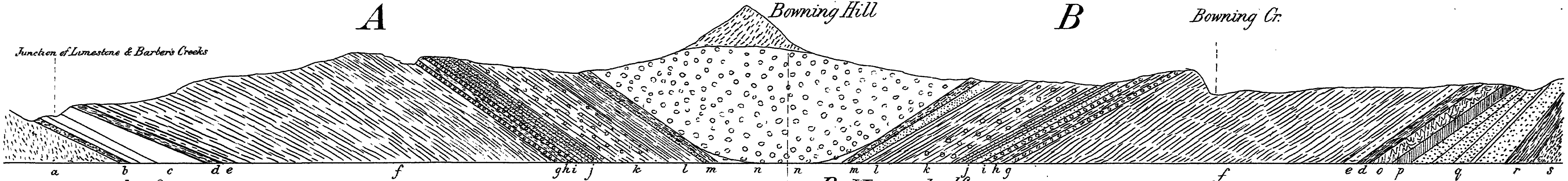
It is not easy to account for this double curvature of the ribs, unless some such twisting of these curved bones has occurred as might result from a forward shift of the upper surface of the fossil, pushing the upper and proximal extremities forward, while the distal and lower remained stationary, or moved in the opposite direction. This would throw any vertical portions of the series of ribs into the same straight line, and would, under the supposition which follows, account for the close approximation of the shafts at about half their length, while it would also, by the attendant vertical pressure tend to make any forward processes spread outwards.

It may therefore be conjectured that each rib diverged from the spine outwards and backwards, but nearly horizontally; that it then bent down nearly vertically towards the ventral aspect; and that finally it curved forwards towards the head. For under such circumstances a gradual pressure from above and behind would produce just such an arrangement as has been described.

Certainly it may be doubted whether ribs of such a character can be Labyrinthodont. Still, the tubular bones, the apparently cartilaginous notochord and the dermal scutes—together with the occurrence of No. 2 in the same beds—offer evidence which must be lodged in the opposite scale. And I do not think anyone will regard this fossil as the remains of a Fish.

The preceding description and argument is based on the assumption that we have the dorsal aspect presented to us. And the whole appearance of the fossil seems to warrant this assumption. But there is a little difficulty in the way, since the remains of the integumentary scales *overlie* the vertebræ and ribs, while according to Miall (Report 1873, p. 245) this armour is entirely *ventral.* However (ib. p. 246), it is also stated that "granular, shagreen-like scales have been found to cover other parts of the body of a few Labyrinthodonts." If these scales are really ventral, the supposed series of neural spines must be regarded as the representative of the lower face of the notochord. In any case, however, the integument presents a finely granular surface, studded with small scutes, which are arranged sometimes singly or by twos and threes, and sometimes in broad patches. No sort of symmetry in the distribution of these patches is observable, or in their shape; so that one is led to conjecture that these 'scutes' appeared piecemeal with advancing age, and may perhaps have disappeared in the same way. The shape of those which are isolated, and therefore developed without interference, is elliptical, the longer axis being transverse to the spine; the margin forms an elevated rim, which surrounds a depressed area at apparently the same level as the skin outside. When they are grouped in numbers they are either arranged along diagonal lines like the scales of ganoids, the diagonals sloping forwards and inwards, or they are set in quincunx, like shingles on a roof, or scales in ordinary fish, but not overlapping, although a striking resemblance to imbrication is produced by the irregular development of the rim, the anterior portion being little raised, or not at all, while the posterior is even more elevated than in the isolated examples. They remind one forcibly of the dermal papillæ of *Monacanthus,* or of sharks.

These two fossils seem sufficiently hard to allow of transparent microscopic sections being prepared from them; a method which would throw much light upon doubtful and unknown points of structure.



A. Eastern half—

a-Metamorphic (quartz-porphyry?); b-Grit; c-limestone; d-shale; e-shale and impure limestone; lower trilobite and Phacops beds; f-great shale bed; g-conglomerate; h-soft shale; i-congl.; j-flaggy sandstone; k-shale containing many water-worn stones; l-laminated shale; m-shale and bands of sandstone; n-conglomerate.

B. Western half

o-Altered coralline limestone; p-quartzite and altered shale,—the Atrypa zone; q-coarse silicious grit with intercalations of fine sandstones and shale; r-shale; s-quartz-porphyry-extends to Two mile Creek; l,k form the upper trilobite zone.

IDEAL SECTION OF BOWNING SYNCLINAL BASIN.

NOTES ON THE GEOLOGY OF BOWNING, N.S.W.

By John Mitchell.

(Plate XXI.)

The following notes bear more particular reference to the Geology of the Parish of Bowning, and a small area eastward of it bounded by Limestone Creek. Some general references will also be made to the geological features of the country to the west of this area.

The former area may for convenience be considered as consisting of two divisions, one extending in an east and west direction from Limestone Creek to a low ridge or boss of quartz porphyry about a mile west of the Public School on the Great Southern Road, and running in a generally N. and S. course, parallel with the strike of the sedimentary rocks; the other extending from this ridge westward to the Black Range, or western boundaryof the parish.

Physical Features.—The Parish of Bowning forms a small portion of the Southern Table Lands, and has an elevation above the sea of from 1,800 ft. to 2,400 ft. The surface is of an undulating character in the central and northern area, and decidedly rugged in the southern.

The most striking feature is Bowning Hill, which is a pyramid-shaped mass rising abruptly to a height of from 600 to 700 ft. above the immediate level on the eastern boundary line of the parish.

The principal valley forms the basin of Bowning Creek, and follows the general strike of the rocks, having been formed chiefly by the erosion of the exposed edges of the more fragile kinds.

The porphyry ridge already referred to divides the parish into two fairly equal parts, and separates the waters of Bowning and

Two-mile Creeks in the higher portions of their basins. Ultimately the Two-mile Creek crosses a denuded part of the ridge, and joins the Bowning Creek two miles south of the township. From this until it joins the Yass River, the bed of the Bowning Creek chiefly passes along quartz porphyry, and, notwithstanding the insignificance of the stream and the extreme hardness of the rock, it has, for some miles, worn a passage of considerable depth.

Climate.—The climate of Bowning may be termed cool. For eight months of the year frosts are common, and usually during each winter light falls of snow take place. Even in winter when the sky is cloudless the days are genial; but with sunset the temperature rapidly falls in winter and summer alike. In summer the temperature rarely exceeds 100° F. in the shade, and occasionally frosts occur in December. These extremes of temperature are trying to delicate constitutions.

The average rainfall is about 20 inches per annum. The prevailing winds are westerly. During the month of November they blow west from sun-rise to sun-set, when an east wind succeeds, that is, a sea breeze, which lulls towards midnight.

In December and January when the Great Plains of the west have been thoroughly heated, it is not unusual for the wind to set eastward for three or four days continuously.

The easterly winds bring up the rain-clouds; but the moisture is not precipitated until their return by the westerly winds, except at rare intervals.

Distribution of Rocks.—In the eastern division of the area now treated of, and starting from the eastern boundary, is a bed of coralline limestone, a continuation of the same bed concerning which Mr. Jenkins has already given some interesting details in his paper 'On the Geology of Yass Plains.' (1) Next succeeds a stratum of shale with masses of coral distributed through it, then fossiliferous shale, and an impure limestone, the 'trilobite bed' of Mr. Jenkins. Then follows an immense bed of shale or mudstone which readily crumbles to mould when exposed to the action of the sun and air.

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(1) Proc. Linn. Soc. N.S.W. Vol. III. pp. 21, 216; Vol. IV. p. 404.

From Barber's Creek to Bowning Creek the Great Southern Railway crosses the bed almost at right angles with the strike for a distance of three miles, and exposes it in all the cuttings. On the rises to the N. and S. of the railway, bands of flagstone varying from an inch to two or three feet in thickness occur. They are in general separated by layers of mudstone or micaceous slightly coherent grit. Almost encompassing the mass forming Bowning and Bald Hills and stretching out from it on the east to Barber's or Derringullen Creek, is a bed of coarse conglomerate. In places this bed has undergone much alteration, and presents a porphyritic appearance, the enclosed pieces of coral having been silicified. In others the change has been slight, and corals enclosed remain perfect. Bowning Hill and contiguous mass is composed of metamorphic rock, the base being in my opinion quartz porphyry, and the superincumbent portion a porphyroid or felstone. In the vicinity of Bowning township the rocks found to the east, with the exception of the limestone, recur. In the position that the limestone should occupy, did it occur on the western side of this division, is a thick bed of coarse silicious grit intercalated with strata of fine, friable, micaceous sandstone, and altered shales. Immediately east of this grit is a thin bed of sinter-like rock, evidently originally a coralline limestone. Also in conjunction with this grit occur thin beds of quartzites and jasper. One of these quartzite beds I shall designate the Atrypa Zone, because of the vast number of *A. reticularis* contained in it. And lastly advancing westward is the quartz porphyry ridge. This extends W. to the Two-mile Creek, and on the Great Southern Road has a thickness of about 5,000 ft. Where it has been much denuded the interior shows a very granitic aspect; and some fragments of it that I submitted to the Mines Department were determined to be granite. But this determination was arrived at from macroscopical inspection only, and therefore cannot be accepted as conclusive. South of Bowning Hill between Bowning and

Derringullen Creeks to the Yass River, the following rocks appear in the order named—conglomerates, shales, impure limestones, limestone, incoherent micaceous sandstone, coarse sandstones and flagstones, and porphyry.

In the western division, starting from the porphyry ridge and proceeding from east to west, first appears a bed of fossiliferous shale, the decomposition of which has formed a fertile loamy soil. Beyond this, as seen on the Binalong Road, are some veins of jasper, and a bed of sandstone containing minute fossils. West of these rocks to the boundary of the Parish at Flinter's Gap on G. S. Road, all the rocks exposed appear more or less altered, though undoubtedly of sedimentary origin. A large proportion of them are cherty in character, and some are porphyritic.

At Murray's Hill and along the N. W. boundary of the parish porphyry intrudes. The southern part of this division I have not had the opportunity of examining fully; but from a casual inspection the rocks seem less altered, and sandstones occur in several places. About three miles S.W. of the township a remarkable felsitic grit is exposed shewing some fossils. Through this grit E. and W. runs a diorite dyke, the grit on each side of it merging gradually into the diorite. Through the diorite runs a quartz vein bearing a good per centage of copper and galena with a little silver. In this place also is a small outcrop of limestone in which a few fossils are imbedded. It is worthy of remark here that the same limestone is visible in the Two-mile Creek about a mile to the east, and on the opposite side of the porphyry ridge, thus showing that the porphyry is intrusive.

Position of the stratified rocks.—The stratified rocks have all undergone change from their original position, and are considerably tilted and folded, but maintain throughout conformability, as well as a regular strike and dip.

The general strike is a little E. of N., and the dip N. of W. The dip varies from 5° to as much as 87°. The eastern division forms a synclinal basin, having been tilted on the W. side by the intrusion of the porphyry boss, and synchronously on the E. by a similar intrusion. Among the results effected by the forces that led to the formation of this, was probably the production of Bowning Hill; but to enter into arguments to prove this would at present be a digression. All the strata are well defined except where severe plications have taken place.

To estimate the thickness of the whole system with any degree of exactness is at present not possible.

Sections.—Starting from the junction of Limestone and Barber's Creeks on the east, and proceeding nearly west to where the G. S. Road crosses the porphyry ridge on the western side of Bowning township, we obtain a section of the eastern division, or what may more properly be termed a double section; for, as stated already, this embraces a synclinal basin; and as one half of the basin differs slightly from the other I shall give an ideal section of each. The calculations as to thickness must be accepted as rough approximations only.

Commencing with the eastern section, a bed of coralline limestone advancing a little beyond our eastern boundary, first claims attention; this is found to rest on a stratum of micaceous grit, just beyond which the porphyry is exposed.

This limestone alone would afford matter for several papers. Probably not another place can be found in the colony so fraught with interest to the palæontologist and geologist. What an accumulation of ancient marine life is here displayed before our eyes! And how admirably preserved! Everywhere corals of various kinds present themselves, and commingling with them are numerous molluscs, *Euomphalus*, *Orthoceras*, *Pentamerus*, *Atrypa*, *Trochus*, and other genera being well represented. But to revert to the stratigraphical description of the bed. Throughout it has a stratified aspect; and at this point seems to be divided into two parts by a bluish micaceous rock. The lower division lies in thin strata separated from each other by thin layers of mudstone, thus giving evidence of periodical invasions of sediment into a clear sea. Distributed through the mudstone are calcareous nodules frequently containing good fossils. The limestone is of a nodular character. This feature may have been caused by the presence of fine non-calcareous silt, which filled the spaces between the corals, and prevented their cohesion. This zone is rich in brachiopods and gasteropods. Of crustaceans I have obtained fragments of two trilobites, *Cheirurus*, sp., and *Cromus Beaumonti*. Among the brachiopods are the familiar Upper Silurian species *Atrypa reticularis*, *Pentamerus oblongus*; also, remarkable above others, is a deeply corrugated *Pentamerus* of triangular shape, that I have not yet identified, and which appears to be typical of this zone. The dip is from 30° to 40°, and its direction S. of W. The whole thickness may be estimated at 125 ft.

The upper portion of the bed is thicker and more compact. During its growth the invasions of silt had ceased, and corals and molluscs increased without hindrance except for the antagonism that may have prevailed among the different forms of life. The characteristic fossil, not coralline, is the large *Euomphalus Clarkei*. A very large *Pentamerus* also occurs. The dip is less than in the lower division and ranges from 15° to 20°. The upper division has a thickness of about 200 feet, so that the total thickness of the bed, therefore, may be fixed at 300 feet. Further south, however, at the Humewood beds of Mr. Jenkins's paper, it attains greater thickness. It may not be out of place to remark here that the general strike of the bed agrees well with the trend of our present coast-line. From this fact the obvious conclusion to be drawn is that our ancient coast-line had a similar trend.

Passing westward we advance to the next bed. Here we have presented the evidence of a great and sudden change in the ancient physical features. The clear sea became densely charged with fine sediment, which established the beginning of the end of the coral reef just referred to.

This bed not only introduces a great change in the character of the rocks, but a sweeping change of fauna. From this upward most of the large molluscs disappear to be seen no more throughout the series. Corals, encrinite stems, and some brachiopods are found in the lower part of the bed.

The later portion exhibits few fossils except bryozoan-like markings. Numerous cavities occur, and these were perhaps at one time occupied by corals. The composition is shaly, and its thickness 20 to 30 feet.

Next in order comes a bed of slightly hardened greyish shale, 40 to 50 feet thick at the point where I have made the section. In other places it reaches double of that thickness. This may be designated the 'lower trilobite zone,' for it is here that this order first appears as a distinguishing feature. In its eastern out-crop representatives of the following genera occur :—*Acidaspis, Cromus* (*Beaumonti*), *Encrinurus* (*punctatus*), *Calymene*, and *Sphærexochus*. From the western outcrop, in addition to the above genera, it has yielded *Harpes*, *Bronteus*, *Cheirurus*, *Staurocephalus*, *Proëtus*, and others. The mollusca are represented, with few exceptions, by brachiopods of small size. Prints of hydrozoa are plentiful ; and occasionally the remains of a seaweed may be found. One of the most noteworthy things in connection with this bed is the sudden appearance of so many trilobites, and particularly those belonging to the genus *Acidaspis*, which in this case follows, instead of precedes, such genera as *Encrinurus*, *Cheirurus*, and *Cromus*. This bed came to an end by the cessation of sedimentary deposits, and a comparatively clear sea supervened for a short period, and admitted of the formation of a thin bed of impure limestone apparently not more than 10 feet thick. This is the 'Phacops Bed' of Mr. Charles Jenkins, (*vide* his paper on the Geology of Yass Plains). It is worthy of note that below these *Calceola sandalina* occurs ; also a small coral resembling *Petraia bina*. The whole bed largely consists of trilobite remains arranged in layers. The sea must have literally swarmed with them. But notwithstanding their number, to obtain a perfect specimen of any species is a rarity. Among the genera that can be distinguished are *Phacops*, *Acidaspis*, and one resembling *Angelina*. The largest species has, from the inspection of a fragment only, been pronounced to be *Phacops longicaudatus*. With Mr. Jenkins I consider that it bears a strong likeness to some forms of *Dalmania*.

Associated with these trilobites are the following:—A coral which I take to be *Petraia corniculum*, *Orthis testudinaria* (?), *Leptaena*, a large *Pleurotomaria*, *Platyceras*, sp., *Cyclonema*, *Strophomena*, an *Orthoceras* having a close affinity to *O. cœreesiense*, and *Orthis biloba.* Superimposed on this bed is an immense one of shale with intercalated thin bands of flagstone. Its thickness cannot be less than 1,300 ft. Towards the completion of the bed the bands of flagstone and grit become more numerous and thicker. Throughout this vast deposit fossils are either rare or altogether absent. In the sandstone at the top I have obtained the prints of shells like *Orthis* and *Atrypa.* The absence of fossils from these shales would appear to have resulted from an absence of life over the area they occupied at the time of their formation, following upon the introduction of conditions unfavorable to organisms. The shales themselves are of a nature well-fitted for the preservation of organisms, had they been present.

From this bed we reach a series of beds that mark alternate periods of marine disturbance and inactivity. These are most likely sequences of considerable upheavals and subsidences of the then sea-bottom.

The first of these beds is one of conglomerate 20 feet thick. The matrix is shale or mudstone; some of the fragments are corals and pieces of limestone showing markings of *Pentamerus* and other shells. Then come 40 feet of soft shale followed by 25 feet of conglomerate rich in fragments of encrinital limestone. On this lie about 100 feet of sandstone of a flaggy character. Then follow about 250 feet of shale containing numerous water-worn stones, in parts almost a conglomerate. Near the top of the bed are many thin bands of flagstone. Next is a bed of laminated shale with bands of flagstone, 150 feet thick. On this rests a coarse conglomerate 50 feet thick. Enclosed are boulders of fossiliferous limestone. Succeeding this is a number of thin strata of shale and sandstone alternately, whose united thickness may be about 50 feet; and then is reached the latest deposit. This is a bed of coarse conglomerate that cannot have a thickness less than 300 feet. It bears a very sea-shore aspect, and marks the close of the series. It has yielded a number of corals and some molluscs, all probably derived from the destruction of older beds. Among the latter are *Rhynchonella*, *Orthis*, and a *Megalodon*.

This completes a section of the eastern half of what may be termed the Bowning Synclinal Basin.

The western half differs very little from the eastern except that, instead of the limestone, at the base occurs a bed of coarse silicious grit, and there is some alteration of some of the lower strata to sinter and quartzite, and that, after the great bed of shale, the succeeding beds are fossiliferous to near the close of the series, including a third zone of trilobites.

Passing now to the western division. Resting against the porphyry are some altered rocks, and beyond these a bed of shale in some parts merging into impure limestone. It is rich in fossils, but they have suffered much decomposition and contortion. *Avicula*, *Pentamerus*, and some gasteropods are noticeable. The trilobites *Cromus Beaumonti*, and *Encrinurus punctatus* are also yielded. The thickness of the bed appears to be from 400 to 500 ft. Adjoining this bed on the line of section, that is along the G. S. Road, the rocks are hidden for some distance; but on the Binalong Road a mile further north the succeeding rocks are altered shales and jasper. From the shale I have obtained minute specimens of brachiopods and gasteropods. From this point to Flinter's Gap (locally known as Carroll's Gap), the western boundary of the parish, the rocks are all of altered character, as far as can be judged from the outcrops. They consist of variously coloured cherts and porphyroids of a jointy nature. Some bear indications of once having been fossiliferous. Their thickness is from 2,000 to 3,000 ft. I estimate the total thickness of this section at not less than 3,000 ft. The distance along this section is three miles nearly, which with the eastern portion gives a total sectional length of eight miles. The western section is doubtless in a large measure a repetition of the eastern one; but the rocks have been subjected to greater change. North and south of the sectional line the rocks appear in places less altered.

West of this formation come what have been termed by Mr. Jenkins the 'Murrumbidgee Beds,' which have been so designated because a good section of them is visible at Cave Flat on the Murrumbidgee; but in my opinion the name 'Coodradigbee River Beds' would be more appropriate ; for nearly the whole course of this river passes along these beds in the direction of their strike. These beds are of interest because of their extent, and the likelihood that they are of Devonian age. Indeed the discovery by Mr. Ratte of the Australian Museum, of a portion of an *Asterolepis*, and certain Ammonites and Nautili of Devonian character in collections obtained from them, together with the fact pointed out by Mr. Jenkins in his 'Geology of Yass Plains', that most of the fossils recognised as Devonian types by De Koninck, and represented as belonging to the Yass beds, really belong to the beds in question, make their Devonian identity almost certain. Their occurrence can be traced from Boorowa on the north, southward through Binalong, Mylora, Bookham, Cave Flat, and along the course of Coodradigbee River (Little River, locally), for upwards of seventy miles.

Palæontological features.—Owing to the difficulty of getting palæontological specimens identified in the colony, I am not, in the present paper, able to give this branch the fulness of treatment its importance requires ; but I hope shortly to be in a position to give a complete list of the fossils which occur in the Bowning series. At present my remarks will be confined to the genera, and a few species that have already been identified by Professor De Koninck through the instrumentality of the late Rev. W. B. Clarke, F.R.S., or whose identification is rendered easy by their wide distribution.

Up to the present no signs of terrestrial remains have been discovered, and the only vegetable remains yet yielded are prints of seaweed.

A distinctive feature of the Bowning beds, especially the Bowning side of the eastern division, is the number and beauty of the remains of hydrozoa and of polyzoa, among which may be mentioned a sertularian, *Fenestella*, *Glaucanome*, and others. These are chiefly confined to the lower strata, associated with trilobites of the lower zone; and some of them bear a close affinity to Devonian types. Crinoids are plentiful.

The mollusca supply representatives of *Orthis* (*socialis* and *biloba* being among the species), *Atrypa* (*marginalis* and *reticularis*), *Terebratula*, *Pentamerus* (*oblongus* and *galeatus*), *Retzia*, *Pterinea* (*pumila*), *Spirifer* (*asper* and *crispus*), *Rotella*, *Patella*, *Trochus* (*bilix*), *Bellerophon*, *Euomphalus*, *Pleurotomaria*, *Ctenodonta*, *Leptaena*, *Meristella*, *Lingula*, *Rhynchonella*, *Discina*, *Orthoceras*, and *Megalodon* (one species). Among the Spirifers is one seemingly identical with a species obtained from the carboniferous rocks at Jamberoo.

Most worthy of special attention is the occurrence of *Orthis biloba*, *O. socialis*, *Pentamerus oblongus*, *P. galeatus*, *Spirifer asper*, *S. crispus*, *Atrypa reticularis*, *A. marginalis*, *Pterinea pumila*, *Platyceras angulatum* (?), and *Orthoceras cœreesiense* Hicks, all typical of the Silurian age. A few of the many corals are *Favosites gothlandica*, *F. aspera*, *Heliolites interstincta*, *Receptaculites Clarkei*, *Petraia bina*, *Ptychophyllum*, *Zaphrentis*.

The Bowning series has peculiar interest by reason of the number of genera and species of trilobites it has yielded. My researches have brought to light 14 genera representing 30 species. They include *Encrinurus punctatus*, *Cromus Beaumonti*, *Bronteus Partschi*, *Calymene* (4 sp.), *Sphaerexochus mirus*, *Harpes*, *Phacops* (3), *Cheirurus*, *Lichas*, *Asaphus*, *Proetus*, and *Acidaspis*. Mr. Ratte (ante pp. 1066-1069) has identified several of these. Of other crustacean forms I obtained specimens of what appear to be fragments of a species of *Pterygotus* and of *Stylonurus*.

Of vertebrate remains no certain indications have been met with.

Geological Age.—Reviewing the general character of the fossils, especially those of the trilobite order, among which the genus *Acidaspis* stands out prominently, I have little hesitation in referring the age of the Bowning Beds to the Upper Silurian System. The great development of shale rocks strengthens this conclusion.

Minerals.—Copper, iron, and lead occur in many places. Copper and lead ores are found in several parts of Limestone Creek; and small veins of galena are met with in Bowning Creek. A little gold has been obtained from some of the creeks which empty into the Limestone Creek.

Surface Accumulations.—The alluvial flats along the course of the Bowning and Limestone Creeks are formed of rich black soils. On some of the hills large accumulations of water-worn stones are noticeable. These have resulted from the disintegration of the conglomerates. Small agates are plentifully distributed among them. The decomposition of the unfossiliferous soft shales *in situ* has formed considerable beds of clay, while that of the fossiliferous shales has formed very fertile loamy soils. Some of these shales may be found to be of economic value as fertilizers.

PLATE XXI.

IDEAL SECTION OF BOWNING SYNCLINAL BASIN.

(The data for the completion of the eastern portion of the section were obtained from the exposure of the strata in the Sharpening Stone Creek.)

NOTES ON THE BACTERIOLOGICAL EXAMINATION OF WATER FROM THE SYDNEY SUPPLY. No. II.

By Oscar Katz, Ph.D., M.A.

Owing to some unavoidable circumstances, especially to the want of appropriate material for cultivating media, I was not able to continue, as I wished to do, the bacteriological examination of Sydney Water, until November 18th, that is for about two months (vide these Proceedings 1886, p. 912). From that date, however, up to December 21st, I was able to test nine samples of water from the Sydney Supply, derived from the tap in the laboratory of the Linnean Hall. On October 17th, I had the opportunity of subjecting a sample of water from the Prospect Reservoir to a bacteriological test.

The results of the examination of the first-named samples may be seen in the following table :—

Date.	Temper. of Water.	Number of Colonies in 1 ccm.	Liquefying Colonies in 1 ccm.
(1) Nov. 18	71°F. = $21\frac{2}{3}$°C.	214	78 = $36\frac{3}{7}$ p.c.
(2) „ 22	70 F. = $21\frac{1}{9}$ C.	540	142 = $26\frac{1}{3}$ p.c.
(3) „ 30	73 F. = $22\frac{7}{9}$ C.	426	218 = $51\frac{1}{6}$ p.c.
(4) Dec. 3	74 F. = $23\frac{1}{3}$ C.	156	92 = 59 p.c.
(5) „ 6	72 F. = $22\frac{2}{9}$ C.	8	4 = 50 p.c.
(6) „ 8	74 F. = $23\frac{1}{3}$ C.	18	4 = $22\frac{2}{9}$ p.c.
(7) „ 13	70 F. = $21\frac{1}{9}$ C.	44	15 = $34\frac{1}{11}$ p.c.
(8) „ 16	74 F. = $23\frac{1}{3}$ C.	245	71 = 29 p.c.
(9) „ 21	72 F. = $22\frac{2}{9}$ C.	342	112 = $32\frac{8}{11}$ p.c.

The mean number of colonies out of these nine single tests amounts to 221 for one cubiccentim. of the water in question; the mean of the liquefying colonies is 82, *i.e.* about 37 p.c.

The above figures indicate a relative purity of the water, if compared with those obtained on previous occasions. The greatest number of bacterial colonies which made their appearance on the plates of nutritive gelatine was, as is seen, 540, whereas in three cases with 8, 18, 44 colonies respectively, the water might be looked upon as nearly free from micro-organisms.

As far as the kinds of bacteria which came under observation are concerned, several new forms were isolated in addition to some of those described before. These bacteria, or at least the more interesting of them, will be dealt with at another time.

Here it may suffice to mention that, so far, pathogenic species have not been found to occur in the tap-water under consideration.

With regard to the sample of water derived from the Prospect Reservoir, alluded to above, I have to state that it was not handed over to me until some time had elapsed from the moment it had been taken. On examination it proved to be exceedingly rich in bacteria capable of propagation in nutrient gelatine; for about 4,000 colonies could be referred to 1 ccm. of the water under treatment. Liquefying colonieswere comparatively very few.

NOTES AND EXHIBITS.

Dr. Ramsay exhibited eggs of *Ptilonorhynchus holosericeus*, *Chlamydodera maculata*, *C. cerviniventris*, *Sericulus melinus*, *Ailurœdus crassirostris* in illustration of Mr. North's Paper; also of *Puffinus brevicaudis*, the Mutton Bird of South Australia. Dr. Ramsay also exhibited a very remarkable Helix-shaped case, probably of a Trichopterous Insect, from Japan.

Mr. Deane exhibited a Spider of the genus *Gastracantha*, and a specimen of *Melaleuca Deanei* from Lane Cove, a species described by Baron von Mueller in a paper read at last month's Meeting of the Society.

Mr. Norton exhibited specimens both in flower and seed, of *Acrophyllum venosum* (one of the "Christmas Bushes") which is generally considered very rare, but is growing and seeding plentifully at the Linden Caves. Also, for distribution among those present, seeds of *Acacia oxycedrus* from Faulconbridge, which he thought would make a valuable hedge plant. Also, from the same neighbourhood a specimen of *Styphelia* which appeared to be the true Sydney "Five Corner;" and a remarkable fungus, *Hydnum imbricatum*, Grev.

Dr. Katz exhibited six different pure cultivations of Bacteria from Sydney Water; also, a showy cultivation of *Bacillus* (*Micrococcus*) *prodigiosus* in nutrient Agar.

Mr. Masters exhibited a specimen of *Ornithoptera Victoriæ* (female) from Guadalcanar, Solomon Islands. He stated that one specimen was taken by Mr. McGillivray thirty years ago, and until very lately it was the only specimen known.

Mr. Smithurst exhibited a specimen of Antique Green Porphyry, or Oriental Verd-antique, from the temple of Antoninus and Faustina in the Roman Forum.

Mr. Fletcher exhibited (1) for the Rev. J. Milne Curran, of Cobar, a specimen of the rare plant *Grevillea anethifolia*, R. Br., in fruit, and read the following note from Mr. Curran. "Baron von Mueller tells me that this plant has not been collected since Cunningham found it near Peel's Range, and that until now the fruit has been unknown to botanists. I have met with it in only one locality in this district, a few miles west from Nymagee Copper Mine, growing on sandy soil—geological formation Devonian." (2) For Dr. Dixson, photographs of two Fin-Back Whales *(Balœnoptera)* male and female, captured at Twofold Bay last September.

The President exhibited the fossils described in his paper, together with a drawing of *Platyceps Wilkinsonii.*

ANNUAL GENERAL MEETING.

26th January, 1887.

The President, Professor W. J. Stephens, M.A., F.G.S., in the Chair.

President's Address.

The Society has now completed the Twelfth Year of its existence, and has already issued Ten Yearly Volumes, the first having been found sufficient to contain the whole work of the two years of its infancy. The Address which I now, according to custom, deliver upon our Twelfth Anniversary will complete the Eleventh, which however will be known as the First of the Second Series. There are many and obvious advantages in breaking up an indefinite succession into convenient sections; and such an arrangement has consequently met with very general adoption.

There is no such special virtue in the 10, that Ten Volumes should always compose a section, or determine a series; but yet it has been very frequently preferred to other numbers, and is at least as old as the time of Pliny, the Historian, who divided his otherwise interminable work into Decades of Ten Books each.

Every Anniversary Meeting is accompanied with a melancholy retrospect over the continually increasing number of comrades, friends, or associates who have deceased within the memory of the survivors. In some instances, as for instance in the famous Waterloo Banquet, the number of these survivors themselves soon began to diminish with startling rapidity, year by year, since there were none to succeed to the empty places. It is not so with a Corporation or Society such as ours. Under our conditions the loss of one friend is partly made up by the accession of another, and the guild remains intact and immortal. The natural, though perhaps not altogether logical, recoil from the thought of an immediate oblivion (which after all can in few cases be long delayed), and the consolation which humanity finds in the assurance that the death of the individual, though acknowledged to be inevitable, and even necessary for the vitality of the Society, will nevertheless be regarded with a tender regret by the surviving members, are feelings which always take some part in the formation and maintenance of clubs, guilds and corporations, even where their ostensible and principal object is of quite a different or even opposite character.

It is, therefore, part of my duty this evening to lay before you such brief notices of those who have been removed from our company by death since our last General Meeting, as is compatible with the main purpose of the day.

Mr. T. H. Boyer - Bower, an enthusiastic naturalist and collector, especially of the Avifauna of this country, who enriched the British Museum and the Zoological Society with many rare or new forms, especially from the imperfectly explored regions of the north-west, has left a gap which will not readily be filled.

The Hon. W. A. Brodribb, M.L.C., F.R.G.S., well known in these colonies for his kindness of heart as well as for his almost ubiquitous energy in all sorts of business, was also an active member of the Geographical Society of Australasia, and of the Royal Society of New South Wales. He passed away, after a long and blameless life, on May 31, respected and regretted by all.

The Rev. C. Kalchbrenner, Corresponding Member of this Society, and a recognised authority on the description and classification of the Fungi, has also passed away. Owing to the remoteness of his place of residence, near Zips in Hungary, few or none of us have had the advantage of his personal acquaintance, but his works bear witness for him.

Dr. Schuette, long and well known in Sydney, both for his professional skill and for his devotion to Science, died during his absence in Germany.

Commander T. Stackhouse, R.N., who died at Rocky Mouth, Clarence River, where he had been residing for eight months under the kind care of Dr. Hood, must be regarded as the originator of this Society, of which he was the first Honorary Secretary. His special pursuit was Botany, though all branches of Science, even of the most speculative, interested him to a very unusual degree. After his removal from Sydney he resided for some years at Yamba, in the Clarence River district, where he employed himself with great success in the investigation and discovery of rare or new species; and where, unfortunately, he contracted by exposure to severe weather the illness to which he ultimately succumbed.

Mr. W. Wilson, of Monaltrie, Richmond River, has also passed away; and at the last moment I learn the death of the Rev. Benedict Scortechini, LL.B., distinguished for his extensive and laborious researches into the Botany of Queensland. He seems to have died at Perak, his career of usefulness and distinction being thus suddenly closed.

The Society has continued to receive important donations of Books for the Library, especially from the liberality of Mr. Macleay, to whom we also owe the excellent Bacteriological Laboratory in which Dr. Katz is now carrying out his researches into the character of the Sydney Water Supply.

We have also received from the Governments of N. S. Wales, Victoria, S. Australia, and Queensland, liberal grants of their scientific publications; from the Geological Survey Department of India a set of all their Memoirs and Reports, as well as of the Palæontologia Indica, an acquisition of the utmost value to the Geologist in Australia; from the Geological Society of London, 10 volumes of their Quarterly Journal; Catalogues from the British Museum; and, from Professor F. M. Balfour's relatives, a copy of the

Memorial Edition of his works. Other donations and exchanges are too numerous to be specified here. They are duly recorded in the Proceedings.

On the last anniversary I had the honour to submit to you an abstract of the work accomplished by this Society during the year then closed, and by other similar Associations in Australasia during the preceding twelve months. And in following the same course to-day, I beg to draw your attention to the quality, as well as the quantity of these transactions. They appear to hold a continuous advance, and indicate not only the learning and intelligence of the writers, but evidently also the growing interest of the public in questions of Science, and especially of Natural History. I have on this occasion classified the Papers of this Society according to their subject matter, retaining in each branch, as before, their sequence according to their priority of time, and not according to any estimate of their relative importance. I commence, therefore, with *Zoology*, continuing with *Botany*, and closing the list with *Geology* and *Palæontology*; and hope that I may furnish a serviceable guide-post for the excursionist over our thousand pages of serious matter, not superseding but assisting in the use of the Index of our Transactions. This is of more importance, naturally, in the case of the allied societies, whose yearly volumes are not generally accessible to our members, except in the Society's rooms.

Mammalia.—Mr. Haswell describes the Myology of *Petaurista*, p. 176. Mr. de Vis, p. 1129, mentions some doubtfully new species of *Halmaturus, Phalangista Petaurista*, and describes *Dromicia frontalis*, n. sp., *Pseudochirus mongan*, n. sp. A new species of *Hapalotis* from N. W. Australia, *H. Boweri*, is described by Dr. Ramsay, p. 1153, being named after the late Mr. T. H. Boyer-Bower, its discoverer, who has since deceased.

Aves.—The Oology of Australian Birds is investigated by Dr. Ramsay and Mr. North in several papers, pp. 1138-52, 1155-74. Dr. Ramsay also contributes a paper on the Birds of West Australia, p. 1085.

Reptilia.—A new Freshwater Tortoise, *Carettochelys insculptus*, obtained by the Geographical Society in the late Expedition to New Guinea, is described by Dr. Ramsay, p. 158, and regarded as intermediate between the Freshwater Tortoises and the Sea Turtles. Mr. C. W. de Vis, describes two new species of Geckos, *Nephrurus levis* and *Diplodactylus tænicauda*, p. 168. Also, *Varanus* sp., p. 1137. Mr. Macleay describes a new *Hoplocephalus*, *H. collaris* making the 24th Australian species on record, p. 1111.

Pisces.—Dr. Ramsay and Mr. Ogilby have a note on *Xiphasia (Xiphogadus) setifer*, Swainson, p. 582, and also describe the following new species from Australia and New Guinea—*Ambassis gigas*, *Apogon roseigaster*, *Arius Froggattii*, *A. spatula*, *Aristeus Novæ-guineæ*, *A. rubrostriatus*, *Chilodactylus morwong*, *Corica Papuensis*, *Coris variegata*, *Engraulis Scratchleyi*, *Equula Smithursti*, *Galaxias Kayi*, *Gobius depressus*, *G. concavifrons*, *Hemipimelodus Dayi*, *H. crassilabris*, *Monacanthus mosaicus*, *Myripristis carneus*, *Sciæna neglecta*, *Solea textilis*, *Syngnathus parviceps*, pp. 4, 8, 131, 474, 879, 941, 1101. Mr. Macleay, p. 511, refers to the previously described *Ctenodax Wilkinsoni*, Macl., from Lord Howe Island, to note that it is generically identical with *Tetragonurus*, Risso, but that its position among the Atherinidæ, as assigned by Günther, can hardly be regarded as natural. It occurs, so far as is yet known, only in the Mediterranean, at Madeira, and at Lord Howe Island.

Insecta.—Mr. Masters continues his Catalogue of the described Coleoptera of Australia, Parts III., p. 21, containing the Lucanidæ, Scarabæidæ, Buprestidæ ; IV., p. 259, Trixagidæ, Eucnemidæ, Elateridæ, Cebrionidæ, Rhipidoceridæ, Dascillidæ, Malacodermidæ, Cleridæ, Lymexylonidæ, Cupesidæ, Ptinidæ, Cioidæ, Bostrychidæ, Tenebrionidæ, Cistelidæ, Pythidæ, Monommatidæ, Melandryidæ, Lagriidæ, Pedilidæ, Anthicidæ, Pyrochroidæ, Mordellidæ, Rhipidophoridæ, Cantharidæ, Œdemeridæ, ; V., p. 585, Curculionidæ, VI., p. 979, Scolytidæ, Brenthidæ, Anthribidæ, Bruchidæ, Cerambycidæ. Mr. Macleay describes the Coleoptera collected on the Fly River N. G., during the Geographical Society's Expedition, with the exception of the Phytophagi, upon which Mr Martin Jacoby is at present engaged. In Miscellanea Entomologica No. 1, p. 381, the same author gives a complete Monograph of the genus *Diphucephala,* and in No. 2, p. 807, deals in the same manner with *Liparetrus.* Mr. Olliff describes p. 171, a new Aphanipterous Insect, parasitic upon *Echidna hystrix,* which he proposes to name *Echidnophaga ambulans.* He contributes a revision of the Staphylinidæ of Australia, pp. 403, 887, abstaining as much as possible from the manufacture of new genera. He describes new species of *Nascio,* p. 861. Mr. Meyrick describes, p. 241, new species of Lepidoptera from the Fly River, N. G., belonging to the genera *Ctimene, Peronetis, Artaxa, Celerena, Stesichora, Anteia, Strophidia, Thalassodes, Siculodes, Nosophora, Conogethes, Encemia,* and establishes *Ateloptila,* n. g. of Boarmiadæ and *Archernis* n. g. of Botydidæ. Also, p. 687, he classifies and describes the species of five families of Australian Macrolepidoptera, with four species which are their only representatives in New Zealand, viz., the Sesiadæ, Arctiadæ (including the group generally called Arctiadæ and Lithosiadæ), Hypsidæ (including Nyctemera and allies), Syntomididæ, and Zygænidæ; striking out certain misleading names, rectifying the nomenclature, and describing new species, with Index of genera and species. Also, p. 803, he states and corrects the synonymy of 16 sp. of Australian Microlepidoptera. Also, p. 1037, he describes 16 new species of Australian Lepidoptera, belonging to 14 genera, of which 6 are new. Mr. Haswell, p. 487, describes the "vocal organs" of the Cicada.

Vermes.—Mr. Fletcher has two papers, pp. 522, 943, on Australian Earthworms, viz:—*Lumbricus, Notoscolex* n. g., *Didymogaster* n. g., *Digaster, Perichæta, Cryptodrilus* n. g., *Megascolides,* with full descriptions of the more important parts of their anatomy, their habits and localities.

Hydrozoa.—Mr. Brazier, p. 575, records the identification of *Ceratella fusca,* Gray, from various localities in the neighbourhood of Port Jackson.

Rhizopoda.—Mr. Whitelegge has drawn up a list, p. 497, of the Freshwater Rhizopods found in the vicinity of Sydney, comprising, at present, 24 species.

Botany.—Mr. Haviland, in a paper, p. 173, on *Oidium monilioides*, a fungus which does enormous injury to the various species of Cucurbitaceæ grown in field and garden, urges high cultivation, and the consequent production of healthy and vigorous plants, as the only treatment which is likely to be practically serviceable against pests of such insidious character. A series of papers has also been commenced by the same author, in which the normal seasons of flowering are to be stated authoritatively for all our indigenous flora, two numbers, for the months of July and August, having already appeared, pp. 1048, 1103. Mr. Whitelegge contributes a note on a specimen of *Chara australis*, the cells of which are of extraordinary size, and very convenient for examination under the microscope of the movements of the living protoplasm. Mr. Haswell, p. 489, describes a simple method for obtaining fine sections of delicate vegetable structures. Dr. Woolls has a note, p. 929, on *Lindsæa trichomanoides*, from the Currajong, and on the occurrence of *Crowea exalata* in the same locality and at Parramatta. Also, p. 859, on the distinction between *Eucalyptus leucoxylon*, and *E. sideroxylon*, which have been united in the *Flora Australiensis* under the former name Mr. Trebeck gives an account of Mount Wilson, with an enumeration and general description of its Ferns, with their various habitats. Mr. A. G. Hamilton reports in like manner upon the Orchids of the Mudgee district, with a table of their Australian distribution. Dr. Katz, who has been for some time engaged on the Bacteriological examination of the Sydney Water Supply, carried on in the Laboratory which forms part of this institution, has communicated the results of his inquiries, so far as they have been prosecuted at present, in two papers, pp. 907, 1205. He also gives an account of a remarkable Bacterium, a species of Streptococcus found growing in some wheat ensilage at Coonong, Urana district, which had apparently produced a serious epidemic among the horses fed upon it, p. 925. Mr. J. Stirling has investigated the distribution and origin of the Rutaceæ of the Australian Alps, and contributes a paper upon that subject, p. 1052.

To conclude, Baron von Mueller, p. 1055, describes the following species of New South Wales plants not previously determined, *Grevillea Renwickiana*, *Melaleuca Deanei*, *Bossiœa Stephensoni*, and *Pultenœa Bœuerlenii*, with further notes on the Southern limit of northern forms.

Geology and *Palœontology.*—Mr. Ratte, p. 133, has a note, illustrated with plates, on *Crioceras Australe* from Yamba near Rockhampton. Also, p. 1069, a second note on *Tribrachiocrinus corrugatus* described Vol. IX., p. 1158 by the author, in which the terminology of Messrs. Wachsmuth and Springer, as used in their Revision of the Palæocrinoidea, is applied to this species. Also, on *Jeanpaulia*? and *Cycadopteris* from the Wianamatta Shales, p. 1078, and on species of Trilobites, new to Australia, of the genera *Lichas Proetus* and *Acidaspis*, from Wellington and Bowning, p. 1063. Captain Hutton contributes a revised list of the Mollusca of the Pareora and Oamaru System of New Zealand (Miocene and Oligocene), which though still incomplete is much fuller than any previously published, containing altogether 268 species, with notes on the nomenclature of some Australian Tertiary Fossils. Mr. J. Stirling, dealing generally with a discussion which has waxed rather warm as to a Glacial period in Australia, summarises fresh and unquestionable evidence in the form of Erratics, *Blocs perchés*, Smoothed Surfaces and Moraines from the Reewa River and Mount Bogong; and refers to the relations between our Alpine and the Tasmanian flora as bearing collateral testimony to the same effect. Mr. J. Mitchell, who has been for some time engaged upon the Geology of Bowning, has drawn out a full account, p. 1193, stratigraphical and palæontological, of that district, showing the Silurian character of many portions which had hitherto been deemed Devonian, and describing the intercalation of the igneous rocks of the district. On the receipt of the newspaper accounts of the Eruptions in the Taupo Zone, N.Z., and before any intelligible reports by competent observers had reached us, I drew up a sketch, p. 513, of the Geological features of the district, chiefly from Hochstetter's Atlas, and ventured upon some speculation as to the future development of volcanic action in that region, which still awaits fulfilment. I still hold however, the same opinion, and think it probable that Rotorua and Rotomahana with the other lakes of that system will gradually after many periods of disturbance sink into the quiescent condition of Lake Taupo. Having detected in a fragmentary fossil from Biloela (Cockatoo Island), Port Jackson, the characters of a lateral thoracic plate of a Labyrinthodont, *(Mastodonsaurus ?)*, I put together some considerations as to the presence of Labyrinthodont Fossils in the Hawkesbury rocks, and the conclusions to which it would seem to lead us, both as to the age of the Hawkesbury-Wianamatta System, and as to the Geographical condition of that period, pp. 931, 1113. A further discovery of a small but fairly perfect fossil of a young Labyrinthodont having been subsequently made near Gosford, Brisbane Water, I gave a full description of it, p. 1175, with further observations upon the character of the formation, and being unable to refer it to any hitherto described form, assigned to it the provisional title of *Platyceps Wilkinsonii.*

The Journal and Proceedings of the Royal Society of N.S.W. for 1885 contains as follows :—

1. The President, H. C. Russell, B.A., F.R.A.S., in his address at the opening of the Session, May 6, besides extraneous matter, deals with many points of local scientific interest, as *e.g.*, the Longitude of Sydney ; the question whether our coast is undergoing elevation or subsidence, the relation between the great Rain and Dust Storms of the Interior, and the oscillations of level in the waters of Lake George.

The Longitude of Sydney, as determined by the latest telegraphic observations, is 10h. 4m. 49·55s., a result which it seems worth while to quote. The evidence as to elevation or subsidence of the coast is examined, but the question as to the present processes left undecided, although subsidence during a comparatively recent period is demonstrated. Curious irregularities of the mean sea levels in Port Jackson, 1873-84 are pointed out, maxima and minima differing by 1·75 inch; but these variations are accounted for by other causes than alterations in the level of the land.

The Rainstorm which in January 1885, traversed the colony from Milparinka to Jervis Bay, is compared with similar storms in 1881-3, and with the Dust Storms of Feb. 6, 1885, and Dec. 12, 1883.

A self-recording gauge has been erected on Lake George for the purpose of registering changes of level due to evaporation, &c. It has however also revealed very unexpected movements in the waters of the lake, apparently of the same nature as the ebb and flow of the Lake Leman and other large expanses of landlocked water. Some observations upon the gravel beds of the basin are of much importance as bearing upon the Geological history of this singular deposit upon our 'Great Divide.'

The same author has also contributed a paper on Local Variations and Vibrations of the Earth's Surface, in which he continues the same subject, and draws special attention to the connection between low barometric pressure and increase of instability in the earth's crust, inclining however to the view that the atmospheric movements which are due to the first, may also take great part in causing the latter series of phenomena. Great ocean waves, such as are called Earthquake Waves, are shown to occur in May and August, originating sometimes in Earthquakes of severe character, but always accompanied by great barometric disturbance, and coincident with the passage of our globe through a meteor stream. Along with the earlier of the two periods a marked fall of temperature is observable.

Other papers are contributed as follows:—By G. H. Knibbs, L.S., on a system of accurate measurement by means of long steel ribands; by Mr. L. Hargrave, on Flying Machines, 2 papers; by the Rev. P. Macpherson, M.A., on some causes of decay of the Australian Forests, ascribing the destruction of the Eucalyptus mainly to the multiplication of the Phalangers (Opossums), but also to the ravages of 'a small copper-coloured beetle' (sic); also, by the same author, on the Stone Implements of the Aborigines of Australia and other countries, in which he shows that there is little or no evidence for a geologic antiquity for the Australian blacks in Australia. Dr. Brandis, F.R.S., communicates a note upon Bamboos from N. W. Himalaya, *Arundinaria falcata*, and *A. spathiflora*, which are also recommended by Baron von Mueller for cultivation in N. S. W. Dr. Morris, F.R.M.S., recommends various media for mounting Diatoms, with an account of his experiments upon them. A short note on the characters of the Adelong Reefs, by S. Herbert Cox, F.C.S., F.G.S., concludes the general papers. But in the proceedings of the Medical Section, Dr. Manning offers 'a Contribution to the Study of Heredity,' in which he enters into a consideration of certain conditions which tend to produce idiocy or imbecility. It was in the Hospital for the Insane at Newcastle that his enquiries commenced, with a view to ascertain how far these evils were the result of hereditary mischief; but was checked in his course by the shocking, but not really strange, discovery that more than one-third of the patients had no known friends or relatives. These children and victims of vice had been picked up in the streets where they had been cast away like human refuse, which indeed, poor creatures, their parents had made them; and so the investigation of Heredity was impossible in their case. The author, therefore, directed himself to the examination of cases in which two or more of a family were afflicted with mental weakness, and so to the particular investigation of the history of 21 families with a total of 82 children, 50 of which were thus affected. The data and arguments are of two pathological a character for this occasion.

The Proceedings of the Royal Society of Tasmania for the year 1885, contain besides a large number of interesting and important notes the following papers, viz.:—

By the Hon. W. Macleay, F.L.S., on the Zoology of Australia, being a general view of the whole animal kingdom, as represented in the Australian Province, p. 285.

By Mr. A. B. Biggs, p. 309, on the Lunar Eclipse of March 30-31, 1881. Also by the same author, a paper on Earth Tremors in Tasmania, describing the apparatus which he has adopted for their measurement, determination of their direction, and accurate timing of the movements, and suggesting that these Tremors are caused by distant or general disturbances so propagated as to stimulate local strains into sympathetic activity, p. 325.

By R. M. Johnston, F.L.S., on the relationship of the Upper Palæozoic and Mesozoic formations of Southern Tasmania, with the associated diabasic rocks, arguing that these latter belong to two periods, the one older than and underlying the Upper Coal Measures, and the other more recent than either, and penetrating both as an eruptive rock, p. 310. Also, by the same author, an account of the Silurian Fossils of the Gordon Limestones, p. 313; Descriptions of New Species of Tertiary leaves from Mt. Bischoff, belonging to *Eucalyptus, Quercus, Laurus, Taxites*, &c., pp. 322, 335; a series of three papers on the Upper Palæozoic and Mesozoic Rocks of Tasmania, with a full description of all the Tasmanian Coal Plants, and an account of their distribution, pp. 343, 361, 362. Also, a table of comparative classification and Map of the General Geological Features of Tasmania

By R. A. Bastow, F.L.S., on *Jungermannia reticulata*, and on Tasmanian Mosses in general, pp. 311, 318, 337.

By W. F. Petterd, C.M.G.S., Descriptions of new species of Marine Shells, viz.:—*Pecten aktinos, Diaphanna nivea, Cassis tumida*, p. 320, *Ancillaria fusiformis, A. obtusa*, p. 342.

By Baron v. Mueller, K.C.M.G., A Note on the Life and Works of the French Botanist, Jean Julien Houton de la Billardière, p. 334.

By Baron von Groddeck, Remarks on the Tin Ore of Mount Bischoff, p. 388, in which he states that the rocks which carry the tin lodes are not Quartz porphyry, but porphyritic Topaz rock, with which Tourmaline occurs in quantity.

By T. Stephens, M.A., F.G.S., a paper on the Records of Boring in Upper Palæozoic beds of Cascades, Hobart, and in the Coal Measures at Tarleton, Mersey, in which the views of Mr. Johnston as to the lower Greenstone are combated, and some suggestions made as to the Homotaxis of the Tasmanian and Australian Super-carboniferous formations, p. 403.

By J. R. McClymont, M.A., on the Topography of Edels Land, De Witt's Land, and Carpentaria, p. 407.

From the Royal Society of Victoria we have received no communications during the past year.

In the Eighteenth Volume of the Transactions of the New Zealand Institute, May 1886, we find papers as follows:—First, Miscellaneous, &c. :—

By Mr. E. Tregear, maintaining the Aryan Origin of the Maori, by a comparison of the language of the latter with Sanscrit, (Hindustani) Persian, Gothic, Greek, Celtic, &c. He further compares the Neolithic civilization of Europe with that of Old New Zealand.

By Professor v. Haast, on the Stone Weapons of the Moriori and Maori.

By W. T. L. Travers, F.L.S., on ancient and modern Food Plants.

By Mr. E. Bartley on the Building Timbers of Auckland.

By the Rev. S. W. Baker on the New Volcano near Tongatabu.

By J. C. Crawford, F.G.S., a strongly written protest against the illogical and slovenly Methods of Spelling and Pronunciation followed by English people.

F. W. Frankland, F.I.A., has a paper on the Non-Euclidian Geometry, and Mr. F. Bull on a new form of Seismograph.

Secondly, on Zoological Subjects, viz. :—

By Professor Parker, on a Genealogical Tree of the Animal Kingdom, to serve as a guide to the student in a museum. The 'Tree' is an actual construction of wood and wire, showing by its various ramifications the presumed descent of such types as are regarded of principal importance. Also, by the same, on the Skeleton of Notornis.

A. Reischek, F.L.S., contributes a series of eight papers on N. Z. Ornithology, and notes on *Sphenodon punctatum*, and the habits of the Mustelidæ.

Mr. Taylor White has Remarks on Moa Feathers, and on Hybrids between *Anas boschas* and *A. superciliosa.*

Mr. Hugh Martin writes on the Protection of Native Birds.

W. Colenso, F.L.S., on a new species of *Sphenodon*, *S. diversum.*

W. A. Hamilton on the Native Birds of Hawke's Bay; on a large specimen of *Orthagoriscus mola*; and on the Fungi known as Vegetable Caterpillars.

Mr. T. W. Kirk contributes two papers on the species of *Carpophaga*, and *Platycercus;* on a new species of *Argonauta*, *A. Bulleri;* on a new Pill Millipede *Sphærotherium novæ-zealandiæ;* and on some specimens of *Vorticella.*

Mr. W. Smith describes the habits of *Ocydromus australis.*

T. F. Cheeseman, F.L.S., describes a new species of *Chromodoris*, *C. amœna.* G. M. Thompson, F.L.S., and C. Chilton, M.A., give a critical list of the Malacostraca of N. Z.; and the latter also describes a new *Philygria*, *P. Thomsoni.* E. Meyrick, B.A., continues his descriptions of N. Z. Micro-Lepidoptera, and corrects his previous nomenclature of the Geometrina. Mr. A. T. Urquhart also continues his history of N. Z. Spiders; Mr. R. J. Kingsley describes a new Butterfly, *Diadema nerina*; A. Purdie, M.A., the life history of *Epyaxa rosearia ;* and Mr. G. V. Hudson, the Metamorphosis of the Caddis Fly.

The Third section of these proceedings is devoted to Botany, and contains papers as follows, viz. —

By W. Colenso, F.L.S., on new plants of the orders Filices, Musci and Hepaticæ. Also, new species of *Ranunculus*, *Stellaria*, *Stackhousia*, *Pomaderris*, *Haloragis*, *Gunnera*, *Hydrocotyle*, *Coprosma*, *Olearia*, *Mentha*, *Pimelea*, *Australina*, *Arthropodium*, *Luzula*, *Scirpus*, *Isolepis*, *Gahnia*, 7 Genera of Orchids, and various Cryptogams. Also, on Weeds introduced from Britain, and on *Clianthus puniceus*. D. Petrie, M.A., describes n. sp. of *Cotula*, *Myosotis*, and *Carex*. Mr. R. M. Laing writes on the Classification of Algæ, and the Fucoids of Banks Peninsula; J. Baber, C.E., on the growth of Transplanted Trees; T. F. Cheeseman, F.L.S., on n. sp. of *Coprosma*; J. Buchanan, F.L.S., on *Cyttaria Purdiei*; T. Kirk, F.L.S., on Nelson Flora; and W. M. Maskell, F.R.M.S., on a new Desmid.

The Fourth or Geological section contains papers by Capt. W. Hutton, F.G.S., on the Geology of Scinde Island, on which the town of Napier is built, arguing that it is composed of rocks belonging to the Petane series resting unconformably on limestone and sandstone beds belonging to the Ahuriri series. Also descriptions of new Tertiary Shells; and a paper on the Wanganui System, its fossils, and its relations to the Pareora. Mr. A. McKay also discusses the question of the age of the Scinde Island rocks, and comes to conclusions opposite to those arrived at by Capt. Hutton, in his paper mentioned above. A full report of the observations of the Total Solar Eclipse, September 9th, 1885, is to be found in Section V., together with a paper by Prof. F. D. Brown, upon Siemen's Theory of the maintenance of Solar Heat. Section VI., Chemistry, contains notes of a new alloy of nickel, *Awaruite*, from Barn Bay, by Mr. W. Skey, and on Platinum Crystals in the iron sands of Orepuki Goldfield, by Mr. W. S. Hamilton.

The Eighth Volume of the Royal Society of S. Australia, (for 1884-5) issued May, 1886, contains papers as follows:—

By Mr. J. J. East, on a Geological Section from Port Wakefield, at the head of St. Vincent's Gulf to the plains of the Murray, in which it is shown that a vast period of time must have elapsed between the upheaval with much faulting and contortion of the lower beds and the deposition of the upper. The former contain no fossils, but are regarded as presilurian.

By Mr. C. Winnecke, lists of plants from Central Australia and near Sturt's Range, examined by Baron v. Mueller.

By Mr. S. Dixon, on indigenous shrubs of S. Australia suitable for fodder, in which, besides the well-known Salsolaceæ, such unlikely genera as *Dodonæa*, *Geijera*, *Bursaria* and *Pittosporum* are mentioned as supplying valuable forage.

By Mr. W. A. Jones, on Iridescent Clouds, distinguishing them from ordinary halos and fragmentary rainbows.

By Mr. Gavin Scoular, on a Glacial Period in S. Australia, referring the phenomena which support such a view to the last period of extreme eccentricity between 240,000 and 80,000 years ago, but restricting the ice action to the drift of icebergs from the south.

Professor Tate, in rejoinder, argues that the evidences of glacier action in S. Australia are numerous and pronounced, and reach as low as the present sea level; that the glacial phenomena were not local, but are attributable to those cosmic causes which produced glaciation at a more recent period in the northern hemisphere; that the extension of the subaërial deposits of the glacial period below sea level demand elevation of the land at the period of their accumulation corresponding in amount at least with that of their present submergence; that the relationship of the Post Miocene faunas and floras of the continent was closer with those of the large adjacent insular masses than that which now obtains, and that this was probably furnished by elevation of the sea bed; and finally that the present arid zone of Central Australia was during the glacial period a region of copious rainfall, of fresh water seas and perennial rivers, and served as the line of migration of the eastern species of south-western generic types, and vice versa.

Also, by the same author, Additions to the Flora of South Australia, Notes on the Australian Palliobranchs of the older Tertiary, and Part I. of a Monograph of the Lamellibranchs of the same.

By Mr. E. Guest, on the Nomenclature of some S. A. Butterflies.

By Mr. W. T. Bednall, on the S. A. species of *Murex* and *Typhus*.

By Mr. W. E. Cooke, on Weather Forecasts in S. A.

By Prof. Lamb, on Electric Currents in Masses of Iron; and on Luminosity of Flame.

By F. S. Crawford, on the Apricot Disease.

By Mr. W. Howchin, on Foraminifera from the Government Boring at Hergott.

The Proceedings also contain an abstract of the various excursions made by the Field Naturalists' Section of the Royal Society, containing many matters of general interest.

The Proceedings of the Royal Society of Queensland, Vol. II., for 1885 (June 1886), contain the following papers, viz.:—

The Presidential Address for 1885, by J. Bancroft, M.D., in which among other subjects of interest, reference is made to the prevalence of Filaria and Hydatid diseases, and to the modes of prevention now adopted with good effect.

By W. E. Armit, F.L.S., F.R.G.S., on the Papuans, pointing out the extraordinary variety of size, form, colour and other ethnological characteristics observable among them; and dwelling on the high qualities which are possessed in many respects by these savages. Also by the same author, Notes on the Languages of the Louisiade Archipelago, and the Islands adjacent to the South Eastern Extremity of New Guinea.

By L. A. Bernays, F.L.S., on the Economic Aspects of Entomology, quoting the practice of France, Germany, and the United States in popularizing and diffusing knowledge of Insect Pests, their natural enemies, and the means of counteracting their mischiefs, as one well worth following in Australia.

By Mr. W. H. Tryon, on *Trichodesmium erythræum* or Sea Sawdust off the Queensland Coast, and pointing out some indications of its poisonous or pathogenic character. Also, a paper on the Harvesting Ants of Queensland.

By C. De Vis, M.A., on *Notiosaurus dentatus;* on *Eleotris crescens;* on *Ornithorhynchus agilis;* on *Calyptotis*, a new genus of Skinks, and three n. sp. of *Salarias*; on a n. sp. of *Apistus;* and on a fossil Saurian, regarded as intermediate between the Crocodiles and the Alligators.

By Mr. J. Keys, a second part of the Contribution to the Flora of Mount Perry.

By Mr. W. K. Broadbent, on the Birds of the Chinchilla District upon the Condamine, with a list of those collected by him.

By W. A. Tully, B.A., F.R.G.S., &c., on the Measurement of Base in the Queensland Trigonometrical Survey.

By Baron v. Mueller, K.C.M.G., &c., on *Elæocarpus Bancroftii*, a new Tiliaceous Tree from N. E. Australia.

By Mr. B. Wagenknecht, on the Brisbane Rainfall.

By E. Palmer, M.L.A., on the Plague of Rats in N. and N.W. Queensland, 1869-70.

By R. C. Ringrose, M.A., on the necessity for a permanent Geological Survey of Queensland.

A Note by John Falconer, C.E., on Artesian Wells in the Maranoa District; with other minor papers and communications.

The completion of Mr. Caldwell's task in the examination of the reproductive process in Marsupials and Monotremes has now, I believe, been attained; and the very remarkable results at which he has arrived are to be forthwith published in the Transactions of the Royal Society. I am not at present aware of any other Zoological work of special Australian interest being carried out abroad.

In General Botanical work Baron von Mueller is of course to the front with the Lithograms of the Myoporinous Plants of Australia, with 74 excellent figures of *Eremophila* and *Myoporum*; has issued a supplement to his Census, "Descriptions of Plants collected in Capricornic Australia," and a supplement to his list of "Australian Fungs." Mr. F. M. Bailey continues his Flora of Queensland; and Dr. Woolls has examined the Eucalypts of the Wellington-Mudgee district in a communication to the 'Sydney Mail.'

I have on many occasions urged the study of Natural History as an essential part of general education. And if I could think that any real progress was being made in that direction, I should not have troubled you again with this matter.

But while an improvement is certainly perceptible in the public appreciation of those Sciences which are seen to lead to a sort of 'payment by results'—and it is well for us that such is the case—I do not see much evidence of a more serious pursuit of Science for the sake of Science, or to speak more generally for knowledge for its own sake, in the educational establishments of the country at large.

And the conviction which I entertain that such a pursuit is natural and lawful, and that it is even (to some extent) obligatory upon civilized men, and that it fails to be recognised in that light entirely on account of a pedantic, irrational and unnatural system of public education, must serve as my excuse for troubling you once more with my considerations.

To commence with a recital of the principal difficulties which stand in the way of Scientific education becoming an integral and indispensable factor in our public education, I would draw your attention to four in particular, the first of which seems almost irremovable, the second only requires wise legislation, the third depends for its existence on the policy of a department, and the fourth is supported by a tradition, which had a value once, but which as now formulated is, like the third, mainly productive of idleness, and hatred of study. Though all efforts at carrying the Royal Road to Knowledge through these four obstacles may and must for the present end in failure, yet there will come a time when the Education Engineers of the day will triumph over all. And it is some little advance in that direction even to look at and estimate the evils which their existence maintains.

Now, in the first place the atrocious heterography of our written language puts out of the question any rational method of teaching to read. In this respect we are almost in the condition of the Chinese, nay, from one point of view we are behind them. Their characters represent things or notions, one for each, though in the different dialects these characters are represented by different sounds, while we distinguish vale, veil, vail, by the difference of the character, though we make no distinction in sound. With us the same sound is represented by a variety of characters, and different sounds by the same character. For instance, the true sound of A long is given by that letter in Hard, by E in Sergeant, and by EA in Heart; E long is represented by AI in Air, A-E in Mare, EI in Heir; E short by AI in Said, EA in Head; I long by EE in Seed, EA in Mead, EI in Receive, IE in Believe, AY in Quay, E in Fever, I in Invalid; I short by U in Busy, IE in Sieve, E in England, EE in Breeches. So also we have the same vowel sounds in Awe, Lord, Fall, Naught, Brought, Broad; in Trough Knowledge, Malt, Moll; in Roll, Coal, Bowl, Roe, Sew; in Moon, Rue, Blew, Fruit, Through, Shoe; in Could, Hood, Full, Soot; and, finally, the same vowel sound is represented by OO, O, U, EA, E, OU, I, in Blood, Word, Curd, Heard, Her, Rough and Bird.

The diphthongs are no better off, and some of the consonants show confusion worse confounded.

We have F sounded as V in Of, and written GH in Trough. One and Won are sounded alike; Gig and General commence with the same, Cat and Kitten with different letters.

In reciting the Alphabet, H is pronounced *Aitch*, a sound which is absolutely alien to its power. In You and Union we have the same initial guttural, Either and Ether have quite different dentals, and S in Busy is Z.

The list of anomalies may be indefinitely extended; but we have here enough for our purpose. I do not doubt but that the difficulty of learning to read is doubled by the utter confusion of the vowels, and doubled again by the misuse of the consonants. For the latter disadvantage we have no remedy short of a purely Phonetic system, such, for instance, as Pitman's Stenographic character without abbreviations. For the former we could, if we had any more courage than sheep, easily find one. Voltaire is said to have defined Etymology as a science of language in which the vowels went for nothing, and the consonants for very little. Taking the jest for earnest, and applying this Etymological principle to English, we should replace the historical vowel characters by real and significant ones, as is done in the written language of every other civilised nation. This would reduce the difficulty of reading, and therefore the useless expenditure of time and mental, or at least memorial, labour by one-half. I must not pursue this subject further, though otherwise I might point out many other economies which might be readily effected upon the same grounds; for there is yet the second heavy load to be mentioned, which is laid upon the British, and upon them alone, in the earliest and most irksome of the labours of childhood. This load is our mediæval system of Weights and Measures, in which there are but two items upon which we can look with satisfaction, one, the enactment that a Gallon must contain exactly 10 pounds of water at a given temperature, and the other, Gunter's chain of 100 links. We have two different Pounds, and three different Ounces; the binary system of avoirdupois, suitable enough to an elementary condition of commerce and cultivation, is broken by the inexplicable introduction of an arbitrary 7; and the areas which have been scientifically measured by the chain are forthwith thrown into the chaos of Roods and Perches.

On this head one might enlarge for hours. But I will not trouble you with more than a humble appeal to help in relieving the young from their dreadful burden of compound addition, compound subtraction, compound multiplication, and compound division. There are no such monsters in the Decimal System. There the child learns one process, applicable to all arithmetical questions, and has time to think about the reasons of things, if he be of an intellectual nature, and is not, if he be naturally averse from mental labour, frightened also from study by the horrid bugbears which we present to him. Remember, too, that in the highest education, or at least the education which is commonly supposed to be most proper for gentlemens' sons, the whole of this business is quietly ignored—an arrangement which may indeed leave people unprepared for many offices of life, but which at least does not stupefy them with an overpowering fog of idiotic details. Why is the education of working people burdened with a load which those who are, in the vulgar phrase, better off, do not touch with the tip of the finger? I do not question that if British legislators here or elsewhere once came to understand how heavily this ancient lumber weights and cripples the classes whose time for schooling is limited, and how, consequently, more enlightened Governments can turn even worse material to better purpose, and so outrun us in the general competition of the world, there would be little time lost in substituting new machinery for that which is worn out. A single Act of Parliament establishing a Decimal System of Weights and Measures would effect more for the higher education of the masses, than the expenditure of millions upon millions under our present system.

But these obstacles cannot be removed by a department, much less by individual effort. The third, worse than these, because more aimless and less useful, besides being so tedious and perplexed that the teachers themselves are all at sea in its intricacies, is the pride of the Public School, the Glory of the Department, the Analysis of the Sentence!

Those who have had anything to do with the various University Examinations in which pupils from Public and other Primary Schools compete, know well how terrible a failure the teaching of this subject *on the average* must be. And in such a matter failure is not merely the negative of proficiency, but it is a positive proof of deterioration and stupefaction of the mind. No one not trained to this analysis-business could, unless by a preternatural talent of fatuity, display such a total incapacity to comprehend things as a very large number of competitors do. As soon as one of them has read a sentence as proposed for parsing or analysis, it seems to lose all meaning, and its reader to lose all sense. And yet this very work ought to be the most logical part of our teaching, instead of being, as it is in the opinion of many competent judges, the most unscientific, and positively detrimental.

I have alluded to the comparative contempt with which some of these subjects are treated in those schools which lay claim to the most aristocratic, if not philosophic methods of instruction and discipline. But these wearisome subjects are nevertheless rendered necessary by the existence of an obsolete system of orthography, and an antiquated set of weights and measures, and it is of no use to ignore the system under which we live. Until we reform it, we must work it. It is the best we have, and ought to be used. And so a just Nemesis has inflicted on the higher schools a grievous imposition of tasks quite as disagreeable, much heavier, and, in nine cases out of ten, without the compensation of utility. Now, I am not going to run down the study of Ancient Literature. On the contrary I hold it to be—for those who have both capacity and leisure—one of the most fertile fields in which the human mind can work. But I do protest against the general enforcement of its cultivation, and more particularly, upon the methods which have come to be adopted, especially during the last half century. Principias and Initias and other rubbish of the kind have nearly jostled any exercise of the thinking faculty out of the school door, and the incessant practice of composition not only absorbs a most disproportionate amount of time and labour, but also *in nine cases* *out of ten* depraves the taste which it is meant to refine. A good teacher indeed may make any subject instructive and attractive; and intelligence and imagination may be cultivated even in the learning of English Spelling, English Weights and Measures, and Exercise Books in general. But I do not thank the subject for that which may be extorted from it. I need not pursue a matter upon which I have enlarged on previous occasions, but confine myself to the repetition of the statement, that science can never under our present plans of school work, obtain even elbow room.

But the scientific spirit may enter unperceived, and turn to advantage even the poor opportunities that are grudgingly conceded. The alphabet itself may be scientifically taught. It must indeed be learnt by rote, since alphabetical arrangements of things are in universal use; and without reason, since it must be difficult to explain to a child why GH may stand for the same sound as F. But the organic distinctions of articulate sounds and the methods by which each is formed may be made quite intelligible, and are quite scientific subjects. The Latin Grammar itself—though the Accidence must be committed to memory with or without reason—affords abundant material for the foundation of the Sciences of Grammar, Logic, and Comparative Philology. Weights and Measures, especially of area and capacity, can be used as an admirable introduction to Geometry. And so with all other subjects. Much has to be simply committed to memory, in order to be used as soon as possible. But to learn by heart what one will not use for a dozen years, or never, is sheer waste of time.

To know by heart the Table of Atomic weights might be convenient for the Chemist, especially in the examination room, but few have been bold enough to support the proposal that this and the like tasks should supplant the old-fashioned Poetry Book. Because nothing should be enforced upon the mere memory except such facts or formulas as are wanted for immediate and continuous use. Passages of Poetry and Oratory are not merely committed to memory; but are absorbed by the whole mind, reason and imagination and other faculties co-operating with the memory. Of such lessons I need say nothing, and they are not often overdone.

But to fix upon the barren memory tables of Specific Gravity, Sets of Formulas, Lists of Classification, is not only not Science, but is as much opposed to the Scientific Spirit, as the ordinary 'learning' of Latin Grammar. Many things must certainly be learnt by heart before they can be understood; and a vast proportion of the information which it is necessary to acquire must be taken on trust, and from authority. This is as true of what is called 'Science' as of any other kind of 'Learning.' And it is quite possible to be very glib in Scientific Terminology, and well crammed with Scientific dogmas, without having gained one breath of the Scientific Spirit.

This is the state of Barry Cornwall's "Tutors of Hall and College, with a great deal of learning and little knowledge." If you asked an average teacher—who could reel off at a moment's notice the number of miles in the diameter of the sun, the earth, and the moon, their distances, times of revolution, nay their very weights—why the moon rises later every night; why the sun moves through the Signs of the Zodiac; why planets sometimes move faster, sometimes slower than the fixed stars, he would probably answer that these questions were improperly put. In most cases you would gain no further information. Yet these are the obvious phenomena which his book learning is only acquired because it is supposed to explain, and which it does explain if it be properly used. And this brings us to a practical definition of what is to be regarded as the elementary scientific teaching proper for general schools. Every subject is scientifically taught when the phenomena which it presents are fully explained to the understanding of the pupil—even though that explanation may involve the acceptance of a vast number of facts and laws which it is impossible to demonstrate to him, but the meaning of which he can understand, and the proof of which he believes *on sufficient authority* to be complete.

If this may be received as a definition of Science in the school, many objections made sometimes in good faith, and sometimes from mere indolence, but sometimes also out of hostility open or dissembled, will be found to disappear. It is reasonably said for instance that an average schoolboy cannot be allowed the run of a Chemical Laboratory, much less a dozen of them together. The stenches and explosions in which their science would surely exhibit itself, and to which it would confine its investigations, would at least unfit the school for occupation, even if the walls might be left standing. The Physical Laboratory would prove even more fatal. Electric shocks and flashes would from time to time decimate the scientist detachment, though a glorious enthusiasm might quickly fill the vacant places.

It is difficult to write seriously upon this objection, which is perfectly good. The only fault of it is that no one in his senses has ever proposed such lunatic arrangements, even if they have in certain cases actually been made. But carefully conducted experiments, with still more carefully constructed explanations are possible enough in Mechanics, Physics, and Chemistry, and will be of advantage to the average. All special capacity in any subject may possibly enjoy special indulgence. But I think experiments carried out by the pupil in person had better be made at home.

Again, in all the Physical Sciences artificial apparatus is essential. And this is a very real difficulty in the case of primary schools, and not unimportant in the case of others.

Moreover the actions illustrated are foreign to daily experience, or at least not constantly suggested to our observation. In Natural History on the contrary we are always in the Laboratory. The most tremendous yet, to us, the most trivial phenomena are incessantly appealing to our senses and our intellect, and it is only our schooling that renders us apathetic, blind and deaf, and dead to their challenge.

The courses of the Sun and Moon, the Starry Heavens, Winds and Clouds, Rain and Dew, Springs and Watercourses, Hill and

Valley, Forest and Plain, with the living creatures which occupy them and the flowers that adorn them are always around us, always accessible, always as ready to teach as we are to learn.

And it is therefore in the study of external nature that habits of rational observation of phenomena ought to be cultivated in every young person. Many will grow up into Chemists, many into Engineers in Steam or Electricity, but all, in or out of a Scientific profession, are or ought to be in some sort of communion with Nature.

There are some who shrink from the analysis of these phenomena either from an oversensitive timidity, which fears to intrude into the secret workings of creation, or from an unpractical and sentimental preference of a phantasmagoria of their own imagination to the realities of truth. But none of us are thus misled. We believe the investigation of nature to be one of man's duties, and we believe also that in nature truth is both stranger and grander than fiction.

It is for the Statesman to see that the general education of the people is such as to render them more observant, more intelligent, more capable of rational recreation, and consequently more cheerful in spirit, and more open to the highest influences of morality and religion than they are now. I do not regard the Interpretation of Nature as a panacea for all the ills of the State, and have intentionally refrained from all reference to the inculcation of high principles, or the maintenance of loyal obedience to authority, and the cultivation of self-control among the younger members of our community, all of which nevertheless would obtain an immense advantage by the substitution of vital teaching for our present mechanical and half dead routine.

I would not be understood to imply that teachers are not doing most valuable service to the State even under the present system, or that no pupils appreciate and enjoy that food which is as sawdust to the majority. But I do say that both the best teachers and the best scholars are most unfairly handicapped by the kind of study upon which a large proportion of their time and energies is spent; and that consequently a large proportion of the funds so liberally provided by the State for the education of the people, is actually wasted upon fatiguing labours which are, and will remain, absolutely fruitless.

Smooth the road as we may, the ascent of the hill is steep and arduous. But the beauties of the scenery quicken the wearied interest, and encourage the climber to ever renewed exertion, if only the track is in tolerable order. Where enormous patience and labour are required for the smallest step in advance, it is idle to suppose that average people will mount any higher than they are forced.

FLOREAT SOCIETAS LINNEANA.

On the motion of the Hon. J. Norton, M.L.C., a vote of thanks was accorded to the President for his Address.

The Hon. J. Norton, M.L.C., Hon. Treasurer, reported on the financial condition of the Society, showing a credit balance of £40 6s. 9d

The following gentlemen were elected

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